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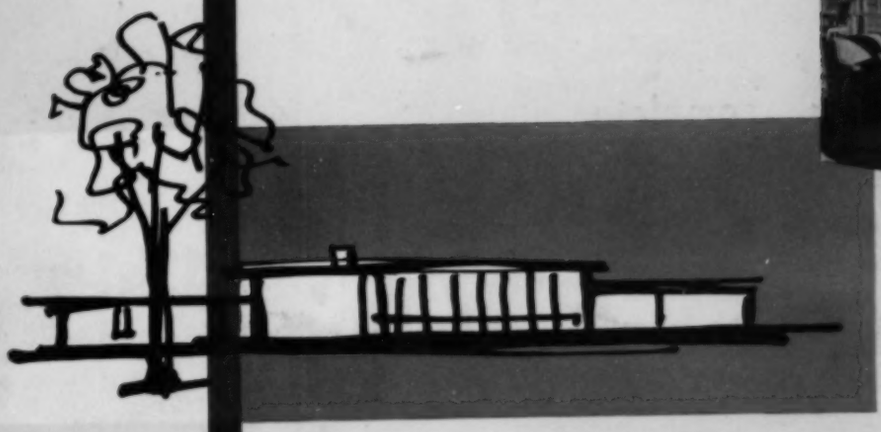

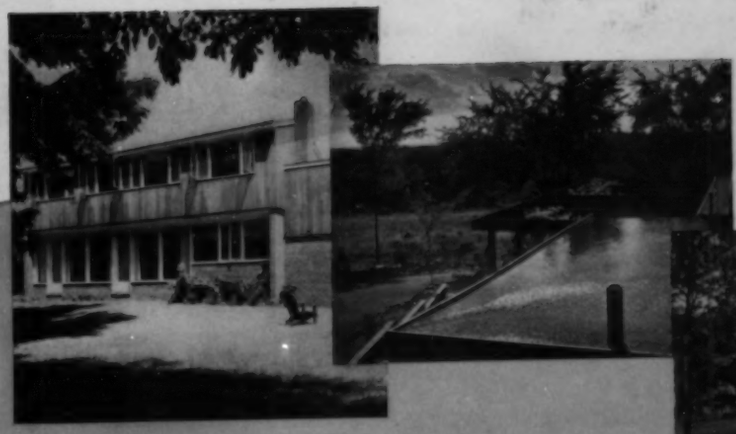

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NEXT YEAR'S BOOM WILL BE DIFFERENT

A statement on the construction outlook for 1951

By Thomas S. Holden, President, F. W. Dodge Corporation,
and Clyde Shute, Assistant Vice President; Manager,
Statistical and Research Division

NEXT YEAR'S BOOM WILL BE DIFFERENT

A statement on the construction outlook for 1951

By Thomas S. Holden, President, F. W. Dodge Corporation,

and Clyde Shute, Assistant Vice President; Manager,

Statistical and Research Division

TRANSFORMATION of this year's housing and consumer durables boom into next year's armament boom will naturally involve some curtailment of the record-breaking construction activity that has prevailed in 1950.

However, it is by no means certain that the 1950 boom could have continued into 1951, even if there had been no Korean crisis. By midsummer a number of key materials being produced at capacity levels were in tight supply, prices were moving up and the makings of a market reaction seemed to be in evidence. There was doubt in many minds whether the market would long continue to absorb new non-farm dwelling units at the rate of more than 1,300,000 a year; new motor vehicles at the rate of 9,000,000 a year; and new refrigerators, household appliances and furnishings, radio and television sets in peak quantities. There was serious question as to whether housing and consumer credit were not over-extended, whether easy credit added to federal deficit spending was not creating a highly inflationary situation.

HOUSING CUTBACK

In view of this it was not surprising, when Regulation X, imposing restrictions on housing credit, was announced on October 10, 1950, that two reasons were cited in support of this action: (1) the need to curb inflation in the housing market; and (2) the need for conserving critical materials for defense purposes.

There does not yet seem to be any exact formula for measuring the effect of turning the inflation spigot on and off. Uncertainty prevailed when the government set about to reinvigorate the waning postwar housing boom in mid-1949. Up to the end of 1949, government economists and a number of others (including the writers of this article) anticipated housing volume in 1950 approximately equal to that of 1949. It turned out that the easy housing credit terms then in force, further credit easing in the spring of 1950 and the free spending mood of the public all combined to produce a volume of new housing 30 per cent greater than that of the previous record year 1949. The 1950 housing record was very closely paralleled by record-breaking production of motor vehicles and of other consumer durables.

While there can be no doubt that the new housing credit policy announced in Regulation X will appreciably curtail the volume of new housing construction, there is some uncertainty as to exactly how much curtailment will result.

Government officials announce the intention of cutting 1951 housing production back one third from the 1950 total volume; from approximately 1,300,000 to 850,000 new non-farm dwelling units. Home builders and other industry men are strongly of the opinion that the credit terms announced October 10 will reduce housing activity 50 to 60 per cent below the 1950 total volume. We incline to the opinion that Regulation X is quite severe and that its effect, unless modified, would be to reduce housing volume considerably more than one third. In our estimates we have assumed that Regulation X will be moderated some time next year, if such action actually proves necessary in order to produce in 1951 approximately two thirds of the 1950 housing volume. It is our view that 800,000 to 850,000 new non-farm units would adequately meet 1951 housing requirements. Single-family houses built on owners' order for

TABLE 1: ESTIMATED PHYSICAL VOLUME OF BUILDING

(in accordance with contract records for 37 eastern states; figures in millions of sq ft)

BUILDING CLASSIFICATION	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
Commercial	126	110	− 13
Manufacturing	111	120	+ 8
Educational and Science	112	110	− 2
Hospitals and Institutional	45	40	− 11
Public	9	8	− 11
Religious	30	22	− 27
Social and Recreational	23	3	− 87
Miscellaneous Nonresidential	25	20	− 20
Total Nonresidential	481	433	− 10
Residential	805	540	− 33
Total Building	1286	973	− 24

TABLE 2: ESTIMATED NUMBERS OF NEW DWELLING UNIT STARTS

(in thousands)

	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
Dodge coverage basis	690	450	− 35
BLS over-all basis	1300	850	− 35

TABLE 3: ESTIMATED DOLLAR VOLUMES OF BUILDING AND ENGINEERING PROJECTS

(in accordance with contract records for 37 eastern states; figures in millions of dollars)

CLASSIFICATION	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
TOTAL (PRIVATE AND PUBLIC OWNERSHIP)			
Nonresidential	5124	4614	− 10
Residential	6529	4236	− 35
Total Building	11,653	8850	− 24
Public Works and Utilities	3000	3000	0
Total Construction	14,653	11,850	− 19
PRIVATE OWNERSHIP			
Nonresidential	3240	2773	− 14
Residential	6244	3886	− 38
Total Building	9484	6659	− 30
Public Works and Utilities	439	532	+ 21
Total Construction	9923	7191	− 28
PUBLIC OWNERSHIP			
Nonresidential	1884	1841	− 2
Residential	285	350	+ 23
Total Building	2169	2191	+ 1
Public Works and Utilities	2561	2468	− 4
Total Construction	4730	4659	− 2

**Nine months actual, last three months estimated*

owners' occupancy are likely to decline less, percentage-wise, than houses built for sale by operative builders.

NONRESIDENTIAL BUILDING

Private nonresidential building participated in the 1950 boom only to a minor degree. A large increase in store building was the natural accompaniment of the housing boom; office building, quiescent for a long period, perked up to a degree; new church building continued to increase. Private industrial building turned upward in the second quarter and made substantial gains. However, there was no appreciable volume of nonresidential building in 1950 that could be appropriately called speculative.

Among public building classifications, schools continue in strong demand. Hospital needs continue large, but plans for expanded federal aid were cut back by the Budget Bureau and the President, as an economy measure. The government's October 27 limitation order on certain types of amusement buildings is apt to be a minor factor in the over-all picture.

Among the nonresidential building classifications, increased volume of manufacturing buildings is indicated in the estimate table, on the ground that government will encourage expansion of plant capacity in nearly every line of manufacturing. Moderate declines are estimated for all the other nonresidential building classifications; among these, social and recreational projects are expected to drop off by the largest percentage, as a result of the limitation orders of October 27.

Net result of estimated declines in all building classifications except one, and of an estimated increase in that one (manufacturing building) is an estimated decrease of 24 per cent new building floor space and a 23 per cent decrease in dollar volume of building contracts.

In the field of heavy construction, we estimate that reduced expenditures for public works will be offset by increased expenditures for utilities. Public works expenditures are likely to be cut back by reason of reduced federal aid and by direct requests of federal authorities to state and local officials urging them to hold construction programs down, or for economy reasons. On the other hand, privately owned power companies will be strongly encouraged to increase capacity and to build new plants.

MODERATE OVER-ALL DECLINE

The estimated over-all decline of 19 per cent in dollar volume of building and engineering contracts to be awarded in the 37 eastern states is a moderate one, all things considered. This is a cutback from the peak construction volume of all time; it leaves a dollar total measurably greater than that of any year except 1950, and a physical volume total that would compare favorably with other prosperous construction years.

We question whether there will be much change in the level of construction costs in 1951. Some materials will be tight; others which were tight in 1950 will be plentiful and competitively priced. Demand for building labor will ease somewhat with reduced construction volume, though doubtless many men who have been employed in construction in 1950 will shift to defense production in 1951.

The moderate extent of the anticipated decline in next year's over-all construction activity rests on the following considerations:

1. The nation's program is at present one of substantial but partial remobilization, not the kind of total mobilization required by all-out global war; armament in 1951 may require 10 to 15 per cent of the country's total physical production, certainly much less than the 40 per cent that was required for World War II.
2. Armament requirements will be met as far as possible by increasing production of key materials.
3. Next year's cutbacks in construction volume will be accompanied by similar cutbacks in output of motor vehicles, household appliances, radio and television sets, etc. Combined cutbacks of these products plus housing will contribute enormous quantities of critical materials to the armament program.
4. Ingenuity in conserving critical materials and in utilizing substitutes will count appreciably in the over-all supply situation.
5. Responsible leaders in government hold the view that a strong civilian economy with maximum freedoms is just as essential for preparedness as is an enlarged military establishment; while adjustment of the economy is essential, dislocations will be kept to a minimum.

These views are largely in accord with the consensus of an opinion survey among leading economists which was conducted by F. W. Dodge Corporation during October 1950. In general, the survey indicated that adjustments to the armament economy would be made without major dislocations.

In passing, it should be explained that, while the opinions of these 106 economists have been given much weight in our appraisal of background conditions and of construction trends, we consider that medians or averages of figures on construction volume submitted are merely convenient summaries of questionnaire answers. In making our own construction estimates, we have given considerable weight to factors impossible to cover satisfactorily in an opinion poll.

Adjustments of the country's production program to the requirements of the armament economy will certainly continue through the first half of next year, perhaps longer. During the period of adjustment there will be some confusion; but, barring new developments which would radically alter the present program, armament production should be getting into full stride in the second half of 1951. By that time, there may be a much clearer definition of the continuing relationship between military and civilian production than is possible now.

CONTINUING CONSTRUCTION NEEDS

Continuing construction needs of an armament economy are considerable. Thus far the only important construction demands arising directly from the armament program are for power and manufacturing plant facilities. These demands will be large, since the needs of the civilian economy will expand along with the growth and development of defense production. Of strictly military construction there is very little now in sight; what there is consists principally of specialized types of technical installations. As yet there is no indication that additional cantonments, air bases or naval bases will be needed in any large amount.

Basic construction needs of the prosperous and growing civilian economy will continue. A too rigorous restriction of truly essential civilian construction could weaken rather than strengthen the war effort.

Basic housing needs continue to be relatively high. Net new family formations are continuing currently at an estimated rate of 550,000 a year. There are always certain replacement needs arising from fire and storm losses, demolitions to make way for nonresidential improvements, and abandonments of deteriorated structures. In addition, migration of families to active industrial centers tends to augment housing demand in those particular areas. The continuing basic demand may possibly average from 800,000 to 850,000 new non-farm dwelling units a year (some estimates are higher than that).

In addition, there will be needs for increased commercial and community service facilities in growing areas. School needs are particularly pressing; expanded hospital facilities will be demanded; new church buildings will be wanted.

So long as our economy is an armament economy and not a war economy, essential construction needs can be met. Unless the scale of the armament effort is increased beyond present plans, armament production will at some stage get into full stride and may from that time involve a fairly constant, rather than a continually increasing, volume of materials and productive effort. It is entirely possible that by the time such conditions are reached, our problems of adequate supply for both civilian and armament economies will have been largely solved. This country's capacity to increase productivity is tremendous.

NO MORE ARTIFICIAL STIMULATION

In one very important sense the status of the construction industry is radically changed. It has been suddenly superseded by the armament industry as the government planners' favorite vehicle for federal spending and for stimulating full employment. However, the growth momentum and the prospective expansion of the American economy are so great that a continuously large construction demand may be expected without artificial government stimulation.

CONTROL PROSPECT UNCERTAIN

The extent to which direct controls or limitation orders may be imposed on the construction industry is unknown today. Credit restrictions have already curtailed the output of one- and two-family houses. Supplementary credit curbs are expected, which would reduce the volume of apartment building. Credit restrictions, however, would accomplish little toward reducing the volume of private nonresidential building.

Credit curbs on housing and consumer durables will effectively reduce demand for a number of critical materials. If critical materials so conserved, supplemented by added production, could adequately balance out the material requirements of stepped-up defense, there would obviously be no need for any direct limitations or prohibitions to be laid on any specific types of construction projects.

Furthermore, if increased personal income taxes are sufficient to reduce the take-home pay of a large majority of the people, this factor of reduced disposable personal income will be an added discourager of consumer spending. If this set of factors would operate perfectly there would be no need of price and wage controls.

Obviously, the transition to the armament economy cannot be expected to work as smoothly and precisely as that. There will be some stresses and strains; there will be from time to time considerable variations as to the supply situation of different critical materials. If some uncontrolled civilian activities (which might include particular categories of building operations) should suddenly increase in volume to the point of interfering with defense procurement, it is quite likely that limitation orders would be imposed.

However, an armament program approximating one third the size of a full-scale war mobilization should not require the full range of controls as applied in World War II. It is conceivable that certain controls or limitations might be imposed to meet a particular defense procurement problem and later relaxed after the supply situation has improved.

In short, the present prospect is that controls will be imposed on a more or less experimental basis. Apparently, the dominant thought in responsible government circles today is that controls should be kept to a minimum. There is realization that the freest possible economy with incentives to expand production will achieve the most toward meeting the needs of the national crisis.

However, it must be emphasized that the possibility of sudden, unexpected, drastic action by government greatly augments the customary hazard of guessing future construction activity. More than ever it is necessary for those who make or follow advance construction estimates to review and revise their figures frequently.

WHAT LEADING ECONOMISTS EXPECT

DURING the month of October, F. W. Dodge Corporation questioned by mail a panel of leading economists regarding their expectations for the year 1951. Among the 106 respondents exactly half were economists on the staffs of private business, financial and management consulting organizations; the other half were connected with marketing, finance and economics departments of universities.

The general consensus of opinion among the 106 may be summarized as follows: armed hostilities will not increase measurably in 1951; over-all volume of production in the United States will increase in spite of cutbacks in construction and in production of a number of consumers' durable commodities; wholesale and retail prices will trend upward but not at runaway speed; a small minority expects rationing of consumer goods next year; less than half the respondents expect limitation orders (other than credit curbs or other indirect controls) on household equipment, housing, private and public nonresidential construction, while small majorities expect general wage and price controls and limitation orders on motor vehicles and radio and television sets; most frequently mentioned 1951 inflation threat was the prospect for wage increases.

Hostilities

As a background question, this was asked: "Do you expect armed hostilities in 1951 on a measurably larger scale than in 1950?" Eleven answered "yes," 92 answered "no"; three did not answer.

Principal difference among those who answered "yes" and those who answered "no" on this question was that those who answered "yes" tend to expect more severe controls next year.

Limitation Orders

The question was posed as to whether direct specific limitation orders (other than credit curbs) would be placed on specific categories of goods. For the most part the division on this question was fairly close, as indicated by the following table:

Class of goods	Expect L-orders	Do not expect L-orders	No answer
Motor vehicles	59	44	3
Radio and television sets	53	47	6
Household equipment	50	50	6
Housing	45	54	7
Private nonresidential building	42	56	8
Public construction	34	63	9

Probable dates of limitation orders indicated by those who expect them are second quarter 1951 for motor vehicles and house equipment, first quarter for radio and television sets and various categories of construction.

Reduced Output

In view of credit curbs, shortages of critical materials and possible L-orders, cutbacks in output of certain goods which have boomed in 1950 are generally expected. Economists were asked to guess at the probable extent of such cutbacks. Tabulated results were as follows:

Class of goods	Range of expected decline	Median percentage decline
Passenger cars and trucks (non-military)	0–40%	20%
Household equipment	0–50%	15%
Radio and television sets (for civilians)	0–50%	20%

Construction Volume

A series of questions was asked on anticipated 1951 changes in the pattern of construction activity.

RESIDENTIAL BUILDING: Declines from 1950 ranging from 0 per cent to 50 per cent were indicated.

In the business group the median expectation was for a 30 per cent decline in number of new dwelling units to be started in 1951, as compared with 1950 volume; in the university group, the median expectation was for a 20 per cent decline; median among all responses, 25 per cent decline.

MANUFACTURING PLANTS: One third expect declines, two thirds expect increases, in manufacturing plant construction next year. Median expectation is for a five per cent increase.

PUBLIC CONSTRUCTION: Dollar volume of public building and engineering contracts is expected to increase. Median expectation is a 10 per cent increase.

PRIVATE NONRESIDENTIAL BUILDING, other than manufacturing plants: Dollar volume of contracts in this general group is expected to decline; median expectation, 15 per cent.

Industrial Production

Economists expect over-all industrial production to increase through next year. The Federal Reserve Board index of physical volume of production stood at a peacetime high of 208 in August. Expectations of the economists at several future dates were reported as follows:

Date	Range of Expectations	Median Expectation
December 1950	190–230	210
June 1951	180–250	215
December 1951	180–260	220

Rationing

On the question: "Do you expect rationing to consumers before the end of 1951?" a clear majority of 75 voted "no" to 30, "yes"; one economist made no commitment on the question.

General Wage and Price Controls

On the question of whether there will be general wage and price controls before the end of 1951, 57 answered "yes," 47 answered "no," and two did not answer.

Among the 57 expecting controls, majority expectation is that they will be imposed before June 30, 1951.

Wholesale Prices

Majority expectation is for steady increase in prices of commodities at wholesale. The U. S.

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NEXT YEAR'S BOOM WILL BE DIFFERENT

A statement on the construction outlook for 1951

By Thomas S. Holden, President, F. W. Dodge Corporation,
and Clyde Shute, Assistant Vice President; Manager,
Statistical and Research Division

ARCHITECTURAL RECORD NOVEMBER 1950

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TRANSFORMATION of this year's housing and consumer durables boom into next year's armament boom will naturally involve some curtailment of the record-breaking construction activity that has prevailed in 1950.

However, it is by no means certain that the 1950 boom could have continued into 1951, even if there had been no Korean crisis. By midsummer a number of key materials being produced at capacity levels were in tight supply, prices were moving up and the makings of a market reaction seemed to be in evidence. There was doubt in many minds whether the market would long continue to absorb new non-farm dwelling units at the rate of more than 1,300,000 a year; new motor vehicles at the rate of 9,000,000 a year; and new refrigerators, household appliances and furnishings, radio and television sets in peak quantities. There was serious question as to whether housing and consumer credit were not over-extended, whether easy credit added to federal deficit spending was not creating a highly inflationary situation.

HOUSING CUTBACK

In view of this it was not surprising, when Regulation X, imposing restrictions on housing credit, was announced on October 10, 1950, that two reasons were cited in support of this action: (1) the need to curb inflation in the housing market; and (2) the need for conserving critical materials for defense purposes.

There does not yet seem to be any exact formula for measuring the effect of turning the inflation spigot on and off. Uncertainty prevailed when the government set about to reinvigorate the waning postwar housing boom in mid-1949. Up to the end of 1949, government economists and a number of others (including the writers of this article) anticipated housing volume in 1950 approximately equal to that of 1949. It turned out that the easy housing credit terms then in force, further credit easing in the spring of 1950 and the free spending mood of the public all combined to produce a volume of new housing 30 per cent greater than that of the previous record year 1949. The 1950 housing record was very closely paralleled by record-breaking production of motor vehicles and of other consumer durables.

While there can be no doubt that the new housing credit policy announced in Regulation X will appreciably curtail the volume of new housing construction, there is some uncertainty as to exactly how much curtailment will result.

Government officials announce the intention of cutting 1951 housing production back one third from the 1950 total volume; from approximately 1,300,000 to 850,000 new non-farm dwelling units. Home builders and other industry men are strongly of the opinion that the credit terms announced October 10 will reduce housing activity 50 to 60 per cent below the 1950 total volume. We incline to the opinion that Regulation X is quite severe and that its effect, unless modified, would be to reduce housing volume considerably more than one third. In our estimates we have assumed that Regulation X will be moderated some time next year, if such action actually proves necessary in order to produce in 1951 approximately two thirds of the 1950 housing volume. It is our view that 800,000 to 850,000 new non-farm units would adequately meet 1951 housing requirements. Single-family houses built on owners' order for

TABLE 1: ESTIMATED PHYSICAL VOLUME OF BUILDING

(in accordance with contract records for 37 eastern states; figures in millions of sq ft)

BUILDING CLASSIFICATION	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
Commercial	126	110	− 13
Manufacturing	111	120	+ 8
Educational and Science	112	110	− 2
Hospitals and Institutional	45	40	− 11
Public	9	8	− 11
Religious	30	22	− 27
Social and Recreational	23	3	− 87
Miscellaneous Nonresidential	25	20	− 20
Total Nonresidential	481	433	− 10
Residential	805	540	− 33
Total Building	1286	973	− 24

TABLE 2: ESTIMATED NUMBERS OF NEW DWELLING UNIT STARTS

(in thousands)

	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
Dodge coverage basis	690	450	− 35
BLS over-all basis	1300	850	− 35

TABLE 3: ESTIMATED DOLLAR VOLUMES OF BUILDING AND ENGINEERING PROJECTS

(in accordance with contract records for 37 eastern states; figures in millions of dollars)

CLASSIFICATION	ESTIMATE YEAR 1950 *	ESTIMATE YEAR 1951	PERCENTAGE CHANGE
TOTAL (PRIVATE AND PUBLIC OWNERSHIP)			
Nonresidential	5124	4614	− 10
Residential	6529	4236	− 35
Total Building	11,653	8850	− 24
Public Works and Utilities	3000	3000	0
Total Construction	14,653	11,850	− 19
PRIVATE OWNERSHIP			
Nonresidential	3240	2773	− 14
Residential	6244	3886	− 38
Total Building	9484	6659	− 30
Public Works and Utilities	439	532	+ 21
Total Construction	9923	7191	− 28
PUBLIC OWNERSHIP			
Nonresidential	1884	1841	− 2
Residential	285	350	+ 23
Total Building	2169	2191	+ 1
Public Works and Utilities	2561	2468	− 4
Total Construction	4730	4659	− 2

** Nine months actual, last three months estimated*

owners' occupancy are likely to decline less, percentage-wise, than houses built for sale by operative builders.

NONRESIDENTIAL BUILDING

Private nonresidential building participated in the 1950 boom only to a minor degree. A large increase in store building was the natural accompaniment of the housing boom; office building, quiescent for a long period, perked up to a degree; new church building continued to increase. Private industrial building turned upward in the second quarter and made substantial gains. However, there was no appreciable volume of nonresidential building in 1950 that could be appropriately called speculative.

Among public building classifications, schools continue in strong demand. Hospital needs continue large, but plans for expanded federal aid were cut back by the Budget Bureau and the President, as an economy measure. The government's October 27 limitation order on certain types of amusement buildings is apt to be a minor factor in the over-all picture.

Among the nonresidential building classifications, increased volume of manufacturing buildings is indicated in the estimate table, on the ground that government will encourage expansion of plant capacity in nearly every line of manufacturing. Moderate declines are estimated for all the other nonresidential building classifications; among these, social and recreational projects are expected to drop off by the largest percentage, as a result of the limitation orders of October 27.

Net result of estimated declines in all building classifications except one, and of an estimated increase in that one (manufacturing building) is an estimated decrease of 24 per cent new building floor space and a 23 per cent decrease in dollar volume of building contracts.

In the field of heavy construction, we estimate that reduced expenditures for public works will be offset by increased expenditures for utilities. Public works expenditures are likely to be cut back by reason of reduced federal aid and by direct requests of federal authorities to state and local officials urging them to hold construction programs down, or for economy reasons. On the other hand, privately owned power companies will be strongly encouraged to increase capacity and to build new plants.

MODERATE OVER-ALL DECLINE

The estimated over-all decline of 19 per cent in dollar volume of building and engineering contracts to be awarded in the 37 eastern states is a moderate one, all things considered. This is a cutback from the peak construction volume of all time; it leaves a dollar total measurably greater than that of any year except 1950, and a physical volume total that would compare favorably with other prosperous construction years.

We question whether there will be much change in the level of construction costs in 1951. Some materials will be tight; others which were tight in 1950 will be plentiful and competitively priced. Demand for building labor will ease somewhat with reduced construction volume, though doubtless many men who have been employed in construction in 1950 will shift to defense production in 1951.

The moderate extent of the anticipated decline in next year's over-all construction activity rests on the following considerations:

1. The nation's program is at present one of substantial but partial remobilization, not the kind of total mobilization required by all-out global war; armament in 1951 may require 10 to 15 per cent of the country's total physical production, certainly much less than the 40 per cent that was required for World War II.
2. Armament requirements will be met as far as possible by increasing production of key materials.
3. Next year's cutbacks in construction volume will be accompanied by similar cutbacks in output of motor vehicles, household appliances, radio and television sets, etc. Combined cutbacks of these products plus housing will contribute enormous quantities of critical materials to the armament program.
4. Ingenuity in conserving critical materials and in utilizing substitutes will count appreciably in the over-all supply situation.
5. Responsible leaders in government hold the view that a strong civilian economy with maximum freedoms is just as essential for preparedness as is an enlarged military establishment; while adjustment of the economy is essential, dislocations will be kept to a minimum.

These views are largely in accord with the consensus of an opinion survey among leading economists which was conducted by F. W. Dodge Corporation during October 1950. In general, the survey indicated that adjustments to the armament economy would be made without major dislocations.

In passing, it should be explained that, while the opinions of these 106 economists have been given much weight in our appraisal of background conditions and of construction trends, we consider that medians or averages of figures on construction volume submitted are merely convenient summaries of questionnaire answers. In making our own construction estimates, we have given considerable weight to factors impossible to cover satisfactorily in an opinion poll.

Adjustments of the country's production program to the requirements of the armament economy will certainly continue through the first half of next year, perhaps longer. During the period of adjustment there will be some confusion; but, barring new developments which would radically alter the present program, armament production should be getting into full stride in the second half of 1951. By that time, there may be a much clearer definition of the continuing relationship between military and civilian production than is possible now.

CONTINUING CONSTRUCTION NEEDS

Continuing construction needs of an armament economy are considerable. Thus far the only important construction demands arising directly from the armament program are for power and manufacturing plant facilities. These demands will be large, since the needs of the civilian economy will expand along with the growth and development of defense production. Of strictly military construction there is very little now in sight; what there is consists principally of specialized types of technical installations. As yet there is no indication that additional cantonments, air bases or naval bases will be needed in any large amount.

Basic construction needs of the prosperous and growing civilian economy will continue. A too rigorous restriction of truly essential civilian construction could weaken rather than strengthen the war effort.

Basic housing needs continue to be relatively high. Net new family formations are continuing currently at an estimated rate of 550,000 a year. There are always certain replacement needs arising from fire and storm losses, demolitions to make way for nonresidential improvements, and abandonments of deteriorated structures. In addition, migration of families to active industrial centers tends to augment housing demand in those particular areas. The continuing basic demand may possibly average from 800,000 to 850,000 new non-farm dwelling units a year (some estimates are higher than that).

In addition, there will be needs for increased commercial and community service facilities in growing areas. School needs are particularly pressing; expanded hospital facilities will be demanded; new church buildings will be wanted.

So long as our economy is an armament economy and not a war economy, essential construction needs can be met. Unless the scale of the armament effort is increased beyond present plans, armament production will at some stage get into full stride and may from that time involve a fairly constant, rather than a continually increasing, volume of materials and productive effort. It is entirely possible that by the time such conditions are reached, our problems of adequate supply for both civilian and armament economies will have been largely solved. This country's capacity to increase productivity is tremendous.

NO MORE ARTIFICIAL STIMULATION

In one very important sense the status of the construction industry is radically changed. It has been suddenly superseded by the armament industry as the government planners' favorite vehicle for federal spending and for stimulating full employment. However, the growth momentum and the prospective expansion of the American economy are so great that a continuously large construction demand may be expected without artificial government stimulation.

CONTROL PROSPECT UNCERTAIN

The extent to which direct controls or limitation orders may be imposed on the construction industry is unknown today. Credit restrictions have already curtailed the output of one- and two-family houses. Supplementary credit curbs are expected, which would reduce the volume of apartment building. Credit restrictions, however, would accomplish little toward reducing the volume of private nonresidential building.

Credit curbs on housing and consumer durables will effectively reduce demand for a number of critical materials. If critical materials so conserved, supplemented by added production, could adequately balance out the material requirements of stepped-up defense, there would obviously be no need for any direct limitations or prohibitions to be laid on any specific types of construction projects.

Furthermore, if increased personal income taxes are sufficient to reduce the take-home pay of a large majority of the people, this factor of reduced disposable personal income will be an added discourager of consumer spending. If this set of factors would operate perfectly there would be no need of price and wage controls.

Obviously, the transition to the armament economy cannot be expected to work as smoothly and precisely as that. There will be some stresses and strains; there will be from time to time considerable variations as to the supply situation of different critical materials. If some uncontrolled civilian activities (which might include particular categories of building operations) should suddenly increase in volume to the point of interfering with defense procurement, it is quite likely that limitation orders would be imposed.

However, an armament program approximating one third the size of a full-scale war mobilization should not require the full range of controls as applied in World War II. It is conceivable that certain controls or limitations might be imposed to meet a particular defense procurement problem and later relaxed after the supply situation has improved.

In short, the present prospect is that controls will be imposed on a more or less experimental basis. Apparently, the dominant thought in responsible government circles today is that controls should be kept to a minimum. There is realization that the freest possible economy with incentives to expand production will achieve the most toward meeting the needs of the national crisis.

However, it must be emphasized that the possibility of sudden, unexpected, drastic action by government greatly augments the customary hazard of guessing future construction activity. More than ever it is necessary for those who make or follow advance construction estimates to review and revise their figures frequently.

WHAT LEADING ECONOMISTS EXPECT

DURING the month of October, F. W. Dodge Corporation questioned by mail a panel of leading economists regarding their expectations for the year 1951. Among the 106 respondents exactly half were economists on the staffs of private business, financial and management consulting organizations; the other half were connected with marketing, finance and economics departments of universities.

The general consensus of opinion among the 106 may be summarized as follows: armed hostilities will not increase measurably in 1951; over-all volume of production in the United States will increase in spite of cutbacks in construction and in production of a number of consumers' durable commodities; wholesale and retail prices will trend upward but not at runaway speed; a small minority expects rationing of consumer goods next year; less than half the respondents expect limitation orders (other than credit curbs or other indirect controls) on household equipment, housing, private and public nonresidential construction, while small majorities expect general wage and price controls and limitation orders on motor vehicles and radio and television sets; most frequently mentioned 1951 inflation threat was the prospect for wage increases.

Hostilities

As a background question, this was asked: "Do you expect armed hostilities in 1951 on a measurably larger scale than in 1950?" Eleven answered "yes," 92 answered "no"; three did not answer.

Principal difference among those who answered "yes" and those who answered "no" on this question was that those who answered "yes" tend to expect more severe controls next year.

Limitation Orders

The question was posed as to whether direct specific limitation orders (other than credit curbs) would be placed on specific categories of goods. For the most part the division on this question was fairly close, as indicated by the following table:

Class of goods	Expect L-orders	Do not expect L-orders	No answer
Motor vehicles	59	44	3
Radio and television sets	53	47	6
Household equipment	50	50	6
Housing	45	54	7
Private nonresidential building	42	56	8
Public construction	34	63	9

Probable dates of limitation orders indicated by those who expect them are second quarter 1951 for motor vehicles and house equipment, first quarter for radio and television sets and various categories of construction.

Reduced Output

In view of credit curbs, shortages of critical materials and possible L-orders, cutbacks in output of certain goods which have boomed in 1950 are generally expected. Economists were asked to guess at the probable extent of such cutbacks. Tabulated results were as follows:

Class of goods	Range of expected decline	Median percentage decline
Passenger cars and trucks (non-military)	0–40%	20%
Household equipment	0–50%	15%
Radio and television sets (for civilians)	0–50%	20%

Construction Volume

A series of questions was asked on anticipated 1951 changes in the pattern of construction activity.

RESIDENTIAL BUILDING: Declines from 1950 ranging from 0 per cent to 50 per cent were indicated.

In the business group the median expectation was for a 30 per cent decline in number of new dwelling units to be started in 1951, as compared with 1950 volume; in the university group, the median expectation was for a 20 per cent decline; median among all responses, 25 per cent decline.

MANUFACTURING PLANTS: One third expect declines, two thirds expect increases, in manufacturing plant construction next year. Median expectation is for a five per cent increase.

PUBLIC CONSTRUCTION: Dollar volume of public building and engineering contracts is expected to increase. Median expectation is a 10 per cent increase.

PRIVATE NONRESIDENTIAL BUILDING, other than manufacturing plants: Dollar volume of contracts in this general group is expected to decline; median expectation, 15 per cent.

Industrial Production

Economists expect over-all industrial production to increase through next year. The Federal Reserve Board index of physical volume of production stood at a peacetime high of 208 in August. Expectations of the economists at several future dates were reported as follows:

Date	Range of Expectations	Median Expectation
December 1950	190–230	210
June 1951	180–250	215
December 1951	180–260	220

Rationing

On the question: "Do you expect rationing to consumers before the end of 1951?" a clear majority of 75 voted "no" to 30, "yes"; one economist made no commitment on the question.

General Wage and Price Controls

On the question of whether there will be general wage and price controls before the end of 1951, 57 answered "yes," 47 answered "no," and two did not answer.

Among the 57 expecting controls, majority expectation is that they will be imposed before June 30, 1951.

Wholesale Prices

Majority expectation is for steady increase in prices of commodities at wholesale. The U. S.

Bureau of Labor Statistics Index for wholesale prices of all commodities stood at 170 in mid-September. Economists' expectations at future dates were reported as follows:

Date	Range of Expectations	Median Expectation
December 1950.....	160–180	172
June 1951.....	160–200	175
December 1951.....	156–200	180

Judging from the median figures, the consensus of opinion appears to be that wholesale price rises will be fairly moderate.

Cost of Living

Majority expectation is for moderate increase in cost of living through the first half of 1951, minor change thereafter. The U. S. Bureau of Labor Statistics consumers' price index stood at 172.5 last mid-July. Economists expect it to stand on future dates as follows:

Date	Range of Expectations	Median Expectation
December 1950.....	165–182	175
June 1951.....	167–200	179
December 1951	165–210	180

According to the median figure, the consensus of opinion is that rises in living costs will be moderate.

Inflation Threats

In order to elicit opinions on economic factors threatening inflation in 1951 the following question was asked: "What, in your opinion, will be the most potent inflation threat in the United States economy in 1951?"

Since a number of respondents cited two or more factors, the total number of items mentioned was 141.

The largest single category of factors cited, 62 in number, concerned wages, wage increases, disposable income increases greater than new taxes, inadequate tax impact on lower incomes, and similar aspects of wages.

Next in line came 50 citations of federal deficit spending, government spending, increasing public and private debt.

Certain aspects of fiscal management rated 17 mentions, such as: unsound federal budget and fiscal policies, monetization of debt, credit expansion and cheap money policy, failure to resolve policy differences between the Treasury and the Federal Reserve Board, inadequate use of fiscal measures to prevent inflation.

Other inflationary factors were mentioned, including: cashing of bonds and savings account withdrawals, public expectation of rising prices, unnecessary price markups, farm price supports, increased consumer expenditures, scarcity of hard goods, and so on.

PARTICIPANTS in the survey, besides several who asked anonymity, were:

Adolph G. Abramson, SKF Industries; Eugene E. Agger, Rutgers; R. S. Alexander, Columbia; W. E. Alley, Drake U.; Harold E. Aul, Calvin Bullock; Sherwin C. Badger, New England Mutual Life; Robert W. Bailey, United Air Lines; Harold B. Baker, General Motors Institute; C. Canby Balderston, Wharton School of Finance; Horace R. Barnes, Franklin & Marshall Col.; Claude L. Benner, Continental American Life; Chelcie C. Bosland, Brown U.; F. A. Bradford, Lehigh; Waite S. Brush, Consolidated Edison.

Robert W. Burgess, Western Electric; Francis J. Calkins, Marquette U.; Cecil C. Carpenter, Kentucky U.; William A. Carter, Norwich U.; Homer V. Cherrington, Northwestern; Phillip S. Clements, Loomis, Sayles & Co.; Miles L. Colean; Neil Carothers, Lehigh; G. Sidney Houston, First Service Corp.; Donald R. Cowan, Michigan U.; W. W. Cumberland, Ladenburg, Thalmann & Co.; D. H. Davenport, NYS Dept. of Commerce; Bernard W. Dempsey, S.J., St. Louis U.; W. M. Dennis, American Cyanamid; Lloyd E. Dewey, N.Y.U.; Charles A. Dice, Ohio State; W. J. Donald, Natl. Elec. Mfrs. Assn.

H. P. Dutton, Ill. Institute of Technology; Lionel D. Edie, Lionel D. Edie & Co., New York; Leonard M. Ekland, Detroit U.; B. E. Estes, U. S. Steel; Bruno Foa; Morris D. Forkosch, Brooklyn Law School; Harold G. Fraine, Wisconsin U.; Roy L. Garis, U.S.C.; Edwin B. George, Dun & Bradstreet; Charles A. Glover, A. T. & T.; Albert Haring, Indiana U.; William F. Hauhart, St. Louis U.; Walter E. Hoadley Jr., Armstrong Cork; Walter M. Hollowell; Louis Hough, Pittsburgh U.; William R. Spurlock, Eli Lilly Co.; Kenneth V. James; O. H. Jekel, Reliable Life; Hiram L. Jome, DePauw; M. J. Jucius, Ohio State; J. S. Kerr, Dennison Mfg.; Donald L. Kemmerer, U. of Ill.; Fred I. Kent, Bankers Trust, New York.

Edmund R. King, Eastman Kodak; Willford I. King; Oswald Knauth; Earl L. Knight; O. N. Kolquist, Natl. Lumber Mfrs. Assn.; Richard L. Kozelka, U. of Minn.; Richard O. Lang, S. C. Johnson & Son; Walter Lichtenstein; Robert L. Linder; Merten J. Mandeville, Ill. U.

Stewart M. Marshall, consulting engr.; Alonzo B. May, Denver U.; Robert W. Mayer, Ill. U.; H. B. Meek, Cornell; Oswald E. D. Merkt, Pa. Co. for Banking & Trusts; D. W. Michener, Chase National Bank; John P. Miller, Yale; Ragnar D. Naess, Naess, Thomas & Thielbar; M. P. Niefeld, Beneficial Management Corp.; Frank D. Newbury; A. S. Newmeyer, Shell Oil; Paul H. Nystrom, Columbia; Elmore Peterson, Colorado U.; Virgil D. Reed, J. Walter Thompson Co.; Roy L. Reierson, Bankers Trust; J. H. Riddle, Bankers Trust; R. G. Rodkey, Michigan U.; John G. Rolph.

John H. Sadler, Kroger Co.; Benedict Saurino, Sun Oil; Lloyd L. Shaulis; Nathan L. Silverstein, Indiana U.; George Soule, Bennington Col.; William R. Spriegel, Texas U.; Wayne M. Stevens; John R. Stockton, Texas U.; W. Bayard Taylor, Claremont Col.; William A. Thomson Jr.; Loyal G. Tillotson, Bradley U.; Charles S. Tippetts, Mercersburg Acad.; James B. Trant, Louisiana State U.; Rufus S. Tucker, General Motors; Q. Forrest Walker, R. H. Macy; Lawrence L. Waters, Indiana U.; Ray B. Westerfield, Yale.

Edward F. Willett, Smith Col.; John B. Williams; E. W. Wilson; Charles S. Wright, Fed. Res. Bank, Chicago; David M. Wright, Virginia U.; Wilson Wright, Procter & Gamble; E. G. Bennion, Standard Oil, N. J.

A.I.A. CENTRAL STATES DISTRICT HAS BIGGEST CONFERENCE; VIRGINIA, CALIFORNIA UNITS MEET

HIGH ATTENDANCE and increasing enthusiasm for the conference idea are reported from three recent meetings of units of the American Institute of Architects.

The largest of these units, the Central States District, which held its annual meeting at Omaha October 13–14, reported the biggest attendance on record for sessions which were generally said to be the most stimulating ever arranged by the district.

With District Director Lorenz Schmidt presiding at most sessions, the architects heard two speeches which provided fodder for a lot of the corridor discussions on "the situation."

Thomas S. Holden, president of F. W. Dodge Corp., warned against either minimizing or magnifying the import of the limited mobilization program: "What we face is an adjustment, not a disruption, of the national economy."

A.I.A. Executive Director Edmund R. Purves urged architects to bulwark the Institute's active emergency program by making recommendations and providing information about themselves and problems on the local level.

On more general themes, the program included speeches by Dean William Wurster, University of California School of Architecture; Harold D. Hauf, editor of ARCHITECTURAL RECORD; Marshall Schaffer, U. S. Public Health Service; Engineer Fred Severud and Architect Roger Allen.

Virginia Chapter Sessions

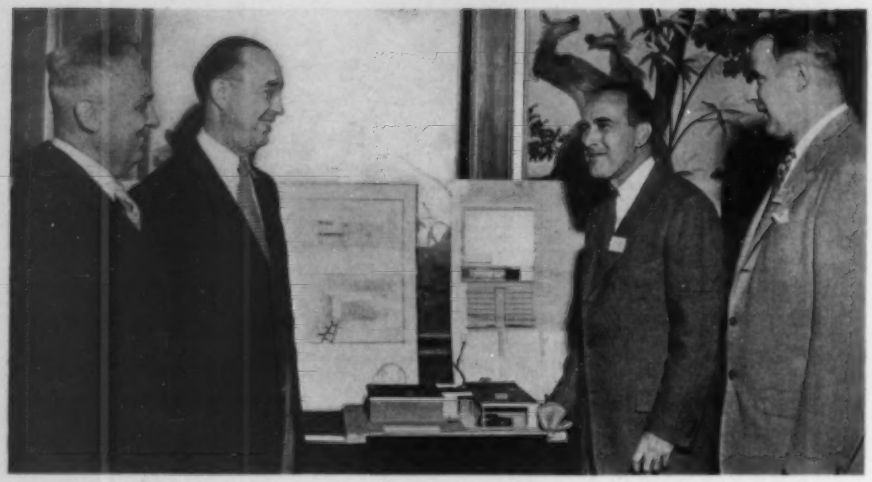
One hundred members of the Virginia Chapter held their annual Fall meeting October 5–7 in Roanoke. Throughout the three-day sessions, small groups huddled in talk over upset conditions in the building industry, but the consensus of opinion seemed to be that things could be a lot worse.

Despite advance billing by Virginia newspapers as a touchy subject, the report on the Chapter's scheme for stock plans for small public schools created little actual excitement. Chapter President Marcellus Wright Jr. merely reported to the membership that a committee from the Chapter had been named to work with the State Board of Education on the matter. State school officials have asked the architects for assistance in the efficient planning of

President McNett of the host association and District Director Schmidt talking about one of the architectural exhibits at Omaha convention

Colortography Photos

At Omaha: Marshall Schaffer; Mrs. Lorentz Schmidt; Col. H. F. Cunningham of Lincoln, who introduced Speaker Edmund R. Purves; Lorentz Schmidt; Mr. Purves; Frank N. McNett, Nebraska Architects president, and Lyle A. Lydick, secretary; Harold D. Hauf; Fred N. Severud; Dean Wurster; Chairman Linus Burr Smith, Department of Architecture, University of Nebraska



Roanoke World News Photo

Virginia Chapter officials and their guests (left to right): District Engineer R. S. Hummel, U. S. Community Facilities Service; A.I.A. Regional Director C. E. Silling; Chapter President Marcellus Wright Jr.; and H. B. Boynton, program chairman for session

A.I.A. MEETINGS

(*Continued from page 9*)

the new $45 million school building program.

Most unpleasant of the subjects reported on and discussed at the meeting was a tax decision by State and City officials. The Old Dominion has extended the gross receipts tax, previously applied to firms alone, to every professionally registered person in the State. Cities in the state also plan to extend their gross receipt levies to include anyone registered, whether a principal or associate of a firm or on salary.

Regional Director Cyrus Silling and Holman Willis addressed the two banquets.

California Council Meets

From California, too, comes the report that an attendance of 450 architects topped all records at the sixth annual convention of the California Council of Architects.

The two-day meeting at Yosemite's Ahwahnee Hotel was highlighted by a progress report from the Council's new executive secretary, Frederick Chase, on the achievements of its intensive public relations program.

Talks by several of the special speakers outlined the opportunities for private architects and engineers in the defense construction program, and a message from Thomas S. Holden, president of the F. W. Dodge Corp., discussed the status of the construction industry in an armament economy.

Tops in popularity among the several seminars were the provocative sessions on "The Young Man in the Institute" and "Schools of Architecture — their Relation to Architects and Architectural Practice."

Architectural exhibit of hospitals was arranged by A.H.A. with A.I.A. cooperation

Fred Hess & Son Photo

ARCHITECT AND DEFENSE DISCUSSED AT MEETING

AN INFORMAL DINNER conference was held October 16 at the Architectural League of New York, for a round-table discussion on the place of the independent architect in defense construction. Representatives of the U. S. Corps of Engineers, the A.I.A., and the architectural press were present.

Col. Edwin Ketchum, Commander, New York District, U.S.C.E., and Charles K. Panish, of the civilian staff, stated that if a national defense program is set up, the government will need to rely heavily on the services of independent architects. The discussion included suggestions on how both large and small architectural offices might best be employed in such work.

Harry M. Prince, vice chairman of the A.I.A. Committee on National Defense, pointed out the steps the A.I.A. already has taken to secure a place for the independent architect in such a program, and to insure close cooperation of the A.I.A. with the various government agencies.

HOSPITAL GROUP ADOPTS OWN APPROVAL PROGRAM

AUTHORIZATION of its own hospital approval program at an estimated cost of $100,000 a year was the biggest news from the 52nd annual convention of the American Hospital Association this Fall.

Membership dues were increased an average of 58 per cent to finance the program, which was adopted over the strong objections of the American Medical Association. The American College of Surgeons had decided to drop the approval program which it has conducted for the past 25 years. Criteria for approval will continue to include physical facilities, balanced representation of medical specialties, medical records, etc.

Of major architectural interest was an all-day seminar on problems in hospital design. Presenting the architect's point of view on successive panels were Aaron Kiff, A.I.A., of York and Sawyer, New York; Carl A. Erikson, A.I.A., of Schmidt, Garden and Erikson, Chicago; George Holderness, A.I.A., of Eggers & Higgins, New York; and Arthur G. Stephenson of Stephenson & Turner, Melbourne, Australia. Two half-day sessions for architects also were held.

Other major convention developments included a resolution asking restoration of a proposed $75 million cut in Hill-Burton funds.

MOST REPRESENTATIVE BUILDINGS, 1925–1950? 58 ARCHITECTS RESPOND TO ANOTHER'S "POLL"

FIFTY-EIGHT contemporary architects have joined a historical parade by turning speculative eyes on the panorama of recent American architecture.

They were pulled into the ranks by Howard Dwight Smith, of Ohio State University's Department of Architecture and Construction, who hoped to find by a sampling of current professional opinion a list of structures which might be accepted as bases for analyzing the architectural trends of the time.

Several months ago Mr. Smith sent queries to 140 architects selected by him as reflecting "a broad cross-section of architectural interest covering a wide geographical area."

His question was: "Based on your snap judgment and without benefit of extensive research, what American buildings of 1925 to 1950 will in your opinion be accepted as examples of the best architectural expression of the period?"

The 58 architects who sent lists in response named Radio City more times than any other project. It got 40 "votes," while the next-most-frequently-named, Cranbrook, had 25.

Next in order came the Philadelphia Savings Fund Society building and Falling Water, with 20 "votes" each; and the United Nations Secretariat, Taliesin West and the Nebraska State Capitol, each listed by 14 architects.

Altogether, 135 buildings or integrated projects were named; 60 only once, 18 only twice, five only three times, and six only four times. Most lists named 10 or 12 buildings, but one named 18 and one named only three.

Two of the buildings which were mentioned most frequently might on the strictest interpretation of Mr. Smith's question have been disqualified by a date: the Nebraska State Capitol was actually designed before 1925 but not in use till 1927. But, says Mr. Smith, "Surely the license which includes the presently uncompleted U.N. Secretariat at this end of the quarter-century could not exclude Nebraska at the other. . . ."

The 12 architects who responded without naming any projects included Frank Lloyd Wright, whose reply was terse: "Dear Smith, How am I to know and comparisons are odious anyway."

Except for four who wished to remain anonymous, these are the architects whose lists were tabulated:

Edgar Albright, New York City; Frederick C. Backus, Buffalo; C. Dale Badgley, New York City; Turpin C. Bannister, Urbana, Ill.; Pietro Belluschi, F.A.I.A., Portland, Ore.; Wells Bennett, F.A.I.A., Ann Arbor, Mich.; Cyrus Y. Bissell, Minneapolis; Kenneth C. Black, F.A.I.A., Detroit; Arthur T. Brown, Tucson, Ariz.; Herman Brookman, Portland, Ore.; Charles Butler, F.A.I.A., New York City; John E. Burchard, Boston; William W. Caudill, College Station, Tex.; DeVon M. Carlson, Boulder, Colo.; Henry S. Churchill, New York City; Gilmore D. Clarke, Ithaca, N. Y.; George B. Cummings, F.A.I.A., Binghamton, N. Y.; G. B. Cummings Jr., Ithaca, N. Y.

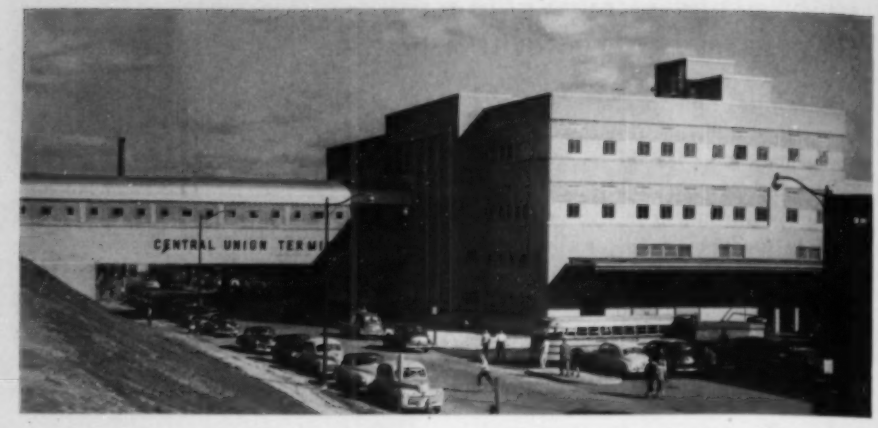
Arthur F. Deam, Philadelphia; James R. Edmunds Jr., F.A.I.A., Baltimore; Charles E. Firestone, F.A.I.A., Canton, Ohio; Paul Gerhardt Jr., F.A.I.A., Chicago; Howard Greenley, New York City; Walter Gropius, Boston; Olindo Grossi, Brooklyn; Talbot Hamlin, New York City; Talmadge C. Hughes,

Photo of rendering shows projected building for First National Bank of Arizona, soon to be under way. Welton Becket is the architect for the new skyscraper, which will have two walls entirely of glass and a "floating screen" of fixed aluminum louvers protecting the top 12 stories of the south elevation from the intense heat of the desert sun. The 180-ft screen, described as resembling in appearance a gigantic, glittering Venetian blind, will be suspended a few ft from the facade it covers and is so designed that it will not obscure the view from the office windows. The device has been engineered to cut air conditioning costs to a minimum. The building will contain 200,000 sq ft, with provision for future erection of a semi-attached "spiral" garage. Sawtooth staggered stalls outside will be provided for "drivein" service. The entire fifth floor will be a landscaped terrace for employees

F.A.I.A., Detroit; Kenneth Johnstone, Pittsburgh; Henry L. Kamphoefner, Raleigh, N. C.; Morris Ketchum Jr., New York City; Francis W. Kenwick, South Bend, Ind.; Walter H. Kilham Jr., New York City; Fiske Kimball, Philadelphia.

Roy F. Larsen, F.A.I.A., Philadelphia; Samuel E. Lunden, F.A.I.A., Los Angeles; Electuo D. Litchfield, New York City; Marian I. Manley, Coral Gables, Fla.; Professor Meador, College Station, Tex.; Everett Meeks, F.A.I.A., New Haven; Novarre Musson, Columbus, Ohio; James H. Mitchell, F.A.I.A., San Francisco; Douglas W. Orr, F.A.I.A., New Haven; Milton S. Osborne, State College, Pa.

Lawrence B. Perkins, Chicago; Herbert J. Powell, F.A.I.A., Los Angeles; John N. Richards, Toledo; Louis Skidmore, F.A.I.A., New York City; R. J. Smith, New York City; William J. Smith, F.A.I.A., Chicago; Glenn Stanton, F.A.I.A., Portland, Ore.; William Ward Watkin, Houston, Tex.; Harold B. Willis, F.A.I.A., Boston; Addison F. Worthington, Baltimore; Morgan Yost, Chicago.



New York Central Photo

NEW YORK CENTRAL OPENS FIRST STATION IN 20 YEARS

ELABORATE DEDICATION ceremonies were staged by the city of Toledo to mark the opening in September of its new $5 million Union Station (photo above), the first station built by the New York Central System in two decades.

The structure, which has exterior walls of yellow brick and glass block, is built on four levels, with a sublevel utility room which contains equipment rooms, transformers and storage facilities.

Waiting rooms, restaurant and ticket offices are on the main or third floor, entered by passengers from the Plaza. Covered ramps and stairways lead to track locations.

On the first floor are operating and maintenance offices and baggage room. On the second level are sleeping quarters for train crews between runs — an innovation in railroad planning — and an employees' recreation room and restaurant. Administrative offices and dispatching facilities are located on the fourth floor, a mezzanine built around the two-story-high waiting room.

There are windows in the concourse walls overlooking the tracks. Paired arches provide entrances to stairways and ramps, with a system of lights to control passenger traffic flow. Ticket counters are open. Throughout interiors, emphasis is on easy maintenance.

R. L. Corsbie of the New York Central Architectural Department was project architect.

58 ARCHITECTS LISTED THESE BUILDINGS:

Project	*Year*	*Architects*	*Times Listed*
Radio City	1931†	Reinhard & Hofmeister Corbett, Harrison & MacMurray Hood & Fouilhoux	40
Cranbrook	1925†	Eliel Saarinen	25
Philadelphia Savings Fund Society	1932	George Howe and William Lescaze	20
Falling Water	1937	Frank Lloyd Wright	20
United Nations Secretariat	1949	United Nations Headquarters Planning Commission; Wallace K. Harrison, Director	14
Taliesin West	1938	Frank Lloyd Wright	14
Nebraska State Capitol	1925	Bertram G. Goodhue & Assocs.	14

PRODUCERS' COUNCIL ELECTS OFFICERS

Officers elected at the recent meeting in New York City of the Producers' Council, Inc., are pictured above: (left to right) president—A. Naughton Lane, vice president, Monarch Metal Weatherstrip Corp., St. Louis; first vice president—Elliott C. Spratt, vice president, Hillyard Sales Co., St. Joseph, Mo.; second vice president—R. S. Hammond, vice president, Johns-Manville Sales Corp., New York City; secretary—Charles A. Snyder, president, Richmond Screw Anchor Co., Inc., New York City; treasurer—F. J. Close, manager of architectural sales, Aluminum Company of America. P. C. was created as an A.I.A. affiliate in 1923

NEWS FROM WASHINGTON *by Ernest Mickel*

First NPA Regulations Restrict Inventories, Set Up Priorities; New Real Estate Credit Curbs Come as Housers Protest Earlier Restrictions; BRAB Surveys Building Research; HHFA Projects Listed; B.O.C.A. Basic Code Stirs Interest; Hospital Plant Grows

NATIONAL DEVELOPMENTS affecting all construction came rapidly as 1950 moved into the last quarter.

The abrupt turning of the military tide in Korea left some problems in Washington as well as at Lake Success. Federal officials feared a public reaction that might threaten support of the continuing war against material shortages and inflation on the domestic front. So there were many signs of outspoken comment in high places about the need for constant alertness.

These things seemed assured:

Rearmament would continue. There was no backing down from earlier pronouncements concerning an army of three million men. Nor was there any intention to slacken the arms order pace. Higher taxes were in view. The big bugaboo of economic controls had returned to plague industry in earnest; and there were unmistakable signs these controls would be strengthened through the fall and into 1951.

All segments of the construction field, along with other industries, were asking the usual question — how much and how far? Two weeks after the National Production Authority issued its first regulation — the inventory controls order — there still were no definitive answers.

It still remained for the Munitions Board to make known publicly the exact requirements for steel and other basic materials for the defense program. Much of the future planning by builders depended upon this.

NPA Regulation 1 tried to restrict supplies of 32 essential materials to "a practicable minimum working inventory." In the building materials category, it covered Portland cement, gypsum board, sheathing and lath. Forest products controlled ran through construction grades of softwood and hardwood, but hardwood flooring was expressly excepted. The explanation was that officials believed an armament program would not require large amounts of this item; therefore it did not need to be included. Material for box, crate and package stock manufactured from saw timber was in the NPA order.

Softwood plywood products were placed under inventory controls by the order. Hardwood veneer was specifically excluded, however. Items controlled under this listing included softwood plywood made in hardwood plywood mills; plywood which has a softwood face; and softwood plywood which has been overlaid with paper, plastic, metal or other material. Wood pulp was included.

The government clamp-down was felt by metals even more extensively. Iron, steel, aluminum, copper, manganese, nickel, tin, zinc and other metals and minerals appeared in Regulation 1. And later the Commerce Department imposed additional destination (export) controls on several non-ferrous metals and manufactures. These included manufactures from aluminum, copper, brass, lead and zinc.

Credit Curbs Disturb Housers

Almost immediately, Commerce let it be known that moderate revision of the controls list was being considered.

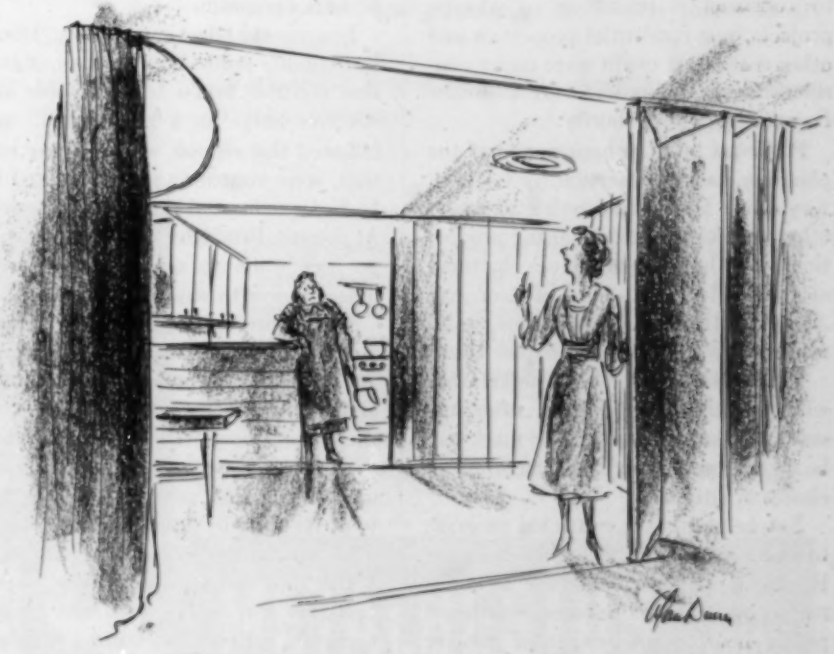
Meanwhile, the machinery of NPA moved slowly but surely toward a multiplicity of regulations. The inventory order launched a series with a priority for earmarked defense orders following the first of October. Firm allocations were in the wind.

At higher policy levels the Administration was establishing a price-wage stabilization agency.

While the overall controls program shaped up slowly, certain industry segments were complaining bitterly that credit restrictions already imposed in the real estate field were too severe. These regulations, coming out July 18 as the first move to curtail housing construction and conserve scarce building materials, were proving to be bitter medicine for the home building industry. President Thomas S. Coogan of the National Association of Home Builders talked of drastic curtailment of the housing supply. He said a rude awakening was in store for veterans wanting to purchase new homes. They would wake up to the fact that the days of no down payments and five per cent on government-backed mortgage purchases were over, he predicted.

But in spite of the home builders' protests, government went ahead with plans

(*Continued on page 16*)



— Drawn for the RECORD by Alan Dunn

"Come here a minute, Anna—I want to show you how to make the dining room—"

WASHINGTON

(*Continued from page 15*)

to strengthen these credit curbs. New regulations which became effective October 12 call for down payments on a sliding scale from 10 per cent in the $5000-and-under price range to 50 per cent at $25,000 and over, with preference for veterans amounting in most cases to 10 percentage points.

The regulations, made public in a joint announcement from the Federal Reserve and the Housing and Home Finance Agency, are geared to the marketing of housing production of not more than 800,000 to 850,000 new housing units next year. This year's output is now estimated at 1.3 million; official government figure on 1949 production is 1,037,000.

Credit restrictions on non-government-aided housing loans are covered under Regulation X issued by the Board of Governors of the Federal Reserve System. Companion restrictions on government aided housing finance were announced by HHFA.

Credits secured by new construction as well as credits extended to finance the purchase of homes were affected. The regulations applied only to residential real estate credit on one- and two-family houses. However, regulations applying to construction credit on rental-type projects, non-residential properties and other real estate credit were under consideration and appeared sure to follow Regulation X very shortly.

Projected into the background of the planning was the assertion by Leon H. Keyserling that credit restrictions and other controls to guide housing production would be necessary. He is chairman of the President's Council of Economic Advisers. In that capacity his statements are watched closely by the trade.

Mr. Keyserling said he hoped that what is left of production after the strict regulations make their mark can be a balanced program, benefiting all classes of citizens.

Yet he wants the restricted program to contain a share of public housing. Raymond M. Foley, housing administrator, also has said he wants continued public housing production in relative proportion to the output of all housing units.

(*Continued on page 18*)

Nearing completion one block north of Toronto General Hospital is a new hospital planned exclusively for children. The Hospital for Sick Children will have the largest milk lab known, with a sterilizer of 1500-bottle capacity. Architects Govan, Ferguson, Lindsay, Kaminker, Maw, Langley and Keenleyside have given the new building design features which tie in with those of nearby Toronto General

NEWS FROM CANADA *by John Caulfield Smith*

Government Acts to Counter Repercussions of Emergency

THE TROUBLED WATERS of the international situation have reached the toes of the Canadian government.

To counter possible repercussions in the construction industry, the government has price controls ready, is discouraging non-defense capital outlays, and has cancelled much of its own public works program.

In a recent budget speech, Hon. Douglas Abbott, minister of finance, stated that controls would be acceptable and effective only "in a great crisis" and followed this remark with a strong hint that, were controls to be instituted by U. S., Canada would have to do likewise. At present, President Truman has shown no inclination to use his recently acquired power to impose such controls.

We require, according to Mr. Abbott, a "prompt and effective anti-inflationary program." He urged private business and public authorities alike to keep their capital investment spending within the limits of immediately essential undertakings. The government promises to do its share by launching an economy drive and by budgeting for a surplus.

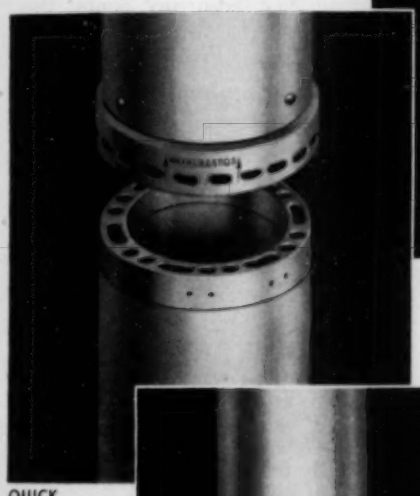
Our new and vastly increased appropriations for defense will not cripple Canada's thriving investment program. It will simply direct it into another channel: rearmament. Of course, a major portion of the expenditure is to go into construction and the re-tooling and production of equipment. This will require large quantities of building materials, steel and basic metals. Heavy demands will be made upon our supply of skilled manpower. Defense investment, Mr. Abbott said, "will compete with, and where necessary it will have to displace, non-essential investment."

Government building projects already under way will be continued, but few new ones will go ahead. Huge cuts are involved in a public works program that was to have cost about $200 million. Post offices, wharves and other items are being cancelled by the score. At the same time, the Government promises that no obstacles will be put in the way of hospital construction. If controls do come, their administrator — Rt. Hon. C. D. Howe, minister of trade and commerce — will be empowered to allocate strategic materials as he sees fit. Hospitals will enjoy high priority.

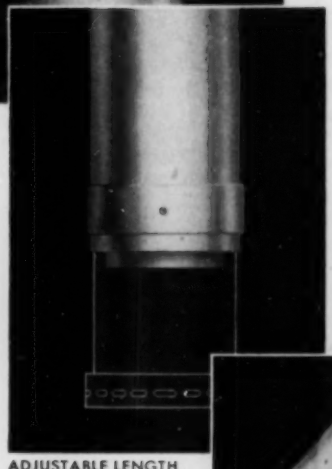
How municipal undertakings will be affected is uncertain. Toronto's subway, which is being built in five sections, may have its completion delayed. Steel for the first section came from U. S., for the second section from Luxembourg. Tenders will be called shortly on the third section. "All we need," declares W. C. McBrien, chairman of the Toronto Transportation Commission, "is the same cooperation from Mr. Howe that we have had in the past."

(*Continued on page 200*)

DOUBLE-WALL CONSTRUCTION



QUICK COUPLING



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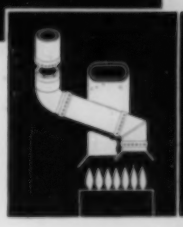

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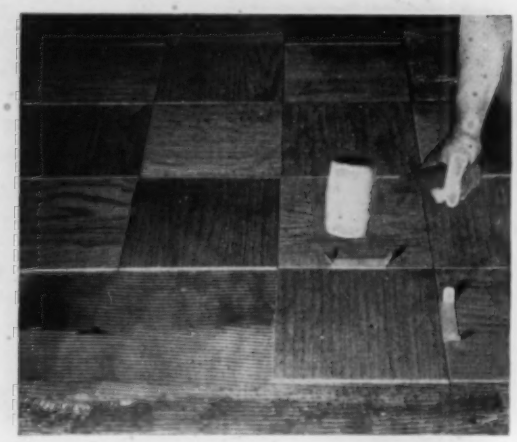

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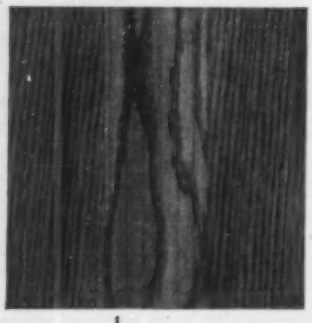

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W+M PARKAY READY-FINISHED HARDWOOD FOR FLOORS AND WALLS

THE RECORD REPORTS

WASHINGTON

(*Continued from page 16*)

The Council chairman put the Administration thinking in the following words:

"Great as our resources are, we cannot support our military defense effort without cutting back very, very substantially and very, very soon from the level of housing production at the middle of this year. . . . If we are going to have to cut back severely on housing — and we are — then we will have to cut back on most of the housing needed least, and less on the housing that is needed most."

If there had been any doubt, this confirmed that the forthcoming restrictions of housing credit would be severe for so-called luxury-type homes. (Note: home builders consider that true luxury type housing constitutes less than one per cent of overall production.)

Then Mr. Keyserling summed up as follows:

"Measured in terms of our resources, we certainly never lived as a nation in housing as good as we could afford to live in, or as good as some other advanced nations of the world. . . . There is no prospect of increasing the supply of all housing materials as fast as the military steps up its demands for them, but we will not have to cut back as much as we endured during World War II, as long as we remain in this intermediate situation."

Why Credit Control?

The former chairman of the President's Council, Dr. Edwin G. Nourse, expressed his views at a recent meeting of the Producers' Council in New York. After telling the building product manufacturers that life had been good to them for some time, and Uncle Sam even better, he said market supporting factors were reaching a waning phase. He listed as conspiring to "release some of your capital" these factors: (1) the real estate credit restrictions; (2) materials allocations; (3) smaller consumer incomes after taxes; and (4) an interruption to family formation.

Dr. Nourse ventured the guess that right after elections, if not before, the building industry would see a set of controls (except wages) reaching wartime proportions. It must be remem-

(*Continued on page 20*)

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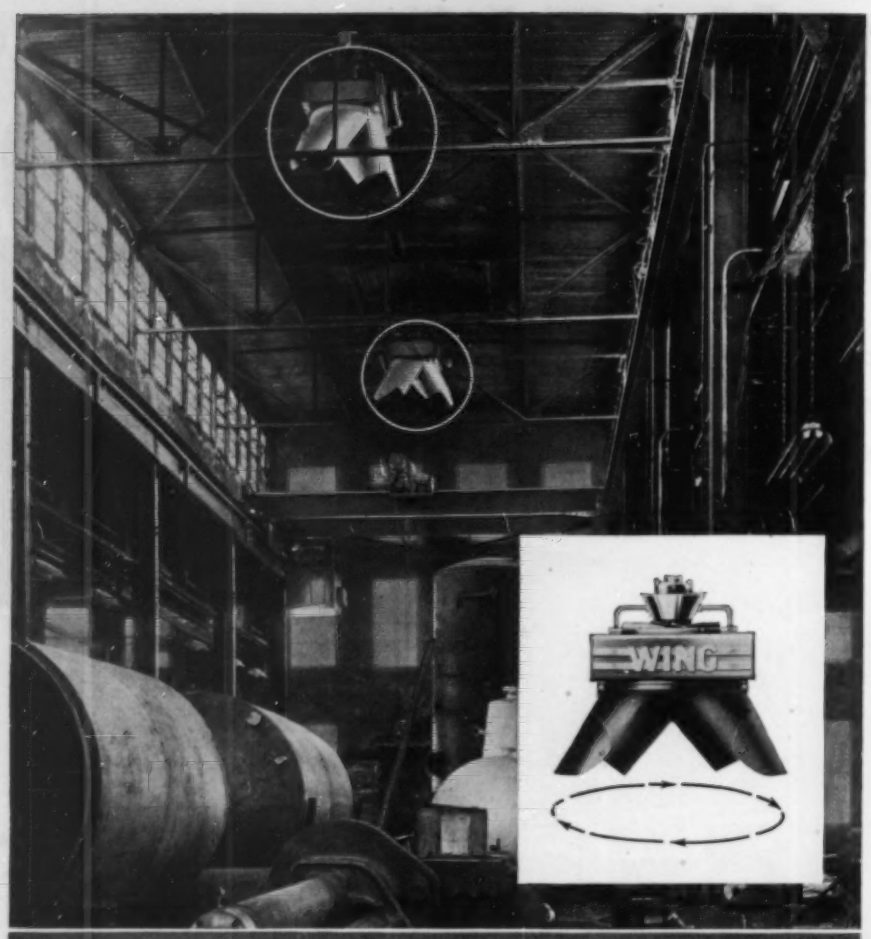

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THE RECORD REPORTS

WASHINGTON

(*Continued from page 18*)

bered that Mr. Keyserling, not Dr. Nourse, now is in the driver's seat on the President's Advisory Council.

Late in September, M. S. Szymczak, member of the Board of Governors, Federal Reserve System, further clarified government thinking on the question of need for restricting housing credit. He told the Savings and Mortgage Division of the American Bankers Association:

"Real estate mortgage credit plays a very important and desirable role in our economic system in normal times. Without such credit, widespread home ownership would not be possible. However, in order that such financing may be of greatest value, it is important that it be used most fully when the construction industry as well as all other industries is in a position to meet demands without inflating prices and otherwise damaging the whole economy.

"When industry in general is running at capacity and increased needs for national defense require a substantial diversion of labor and materials for civilian use, the expansion of mortgage credit will only add fuel to the fires of inflation. If mortgage credit is appropriately limited now, it will be in a better position to play its essential role when more productive capacity becomes available to meet consumer demands."

He then described Federal Reserve's approach in these general terms:

"Restrictions will be imposed on credit (whether or not secured by a mortgage) granted for new construction, including major additions and improvements to existing structures, and may cover industrial and commercial as well as residential properties. Interest rates will not be regulated, but minimum down payment requirements will be established on residential properties. Consideration is also being given to maximum maturity and/or minimum rate of repayment requirements."

The restriction of real estate credit posed new problems for the men in Federal Reserve and HHFA who worked out details. There was plenty of precedent for the consumer credit regulations that came along under Regulation W, reimposed; but there was no such basis from which to project the real estate program.

(*Continued on page 22*)

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THE RECORD REPORTS

Research

The Building Research Advisory Board has found a firm foundation after a somewhat uncertain beginning over a year ago. Twenty-two of its 30 Board members attended a regular meeting in Washington a month ago. It was clear at this session that BRAB will play an important part in correlating research at a time when it is most needed.

WASHINGTON *(Cont. from p. 20)*

The board discussed general policy matters, its future programs, the place of building research in the defense program, considered the financial report and the Director's report.

Under the guidance of Director William Scheick, the BRAB effort has expanded and become better known in industry circles during the past year. Mr. Scheick, by the way, has secured another year's leave of absence from his position as Director of the Small Homes Council of the University of Illinois. While he is on active duty with the Board here, James T. Lendrum is acting as director of the Small Homes Council.

BRAB presently is engaged in a project calling for research on research. Under a contract arranged between the Housing and Home Finance Agency and the National Academy of Sciences, the board's parent body, BRAB is conducting a survey of building research throughout the United States. Proposed scope of the survey, said Mr. Scheick, will encompass research activities directly related to housing carried out by educational institutions, trade associations, professional societies and independent research organizations. The study will cover research both under way and completed.

The next general conference of the board will be on the subject of fire resistance of exterior walls. This will be held in Washington, D. C. November 21. The first such conference was here in January on the subject of weather and the building industry.

At the recent board meeting the question of many other smaller conferences, to be held in cities other than Washington, was discussed. BRAB will continue to foster the general conference on specifically selected subjects periodically. But it was thought a new plan could be devised whereby certain members of the board might sponsor round-table group sessions on subjects of special interest to them in their own localities. The new approach was not drawn out to final conclusion; it was discussed as a possibility.

New BRAB Members

Nine new members have joined BRAB ranks, and five of the original members have departed. New members are: John E. Burchard, Dean of Humanities, M.I.T.; Kermit Eby, associate professor, Division of Social Sciences, University of Chicago; Henry T. Heald, President, Illinois Institute of Technology; R. J. S. Piggott, director, Engineering Division, Gulf Research & Development Co.; M. Allen Pond, chief, Division of Engineering Resources, Public Health Service; Ralph Walker, president, American Institute of Architects; Stanton Walker, director of engineering, National Sand & Gravel Association; B. L. Wood, consulting engineer, American Iron and Steel Institute; and W. R. Woolrich, dean, College of Engineering, University of Texas.

(Continued on page 24)

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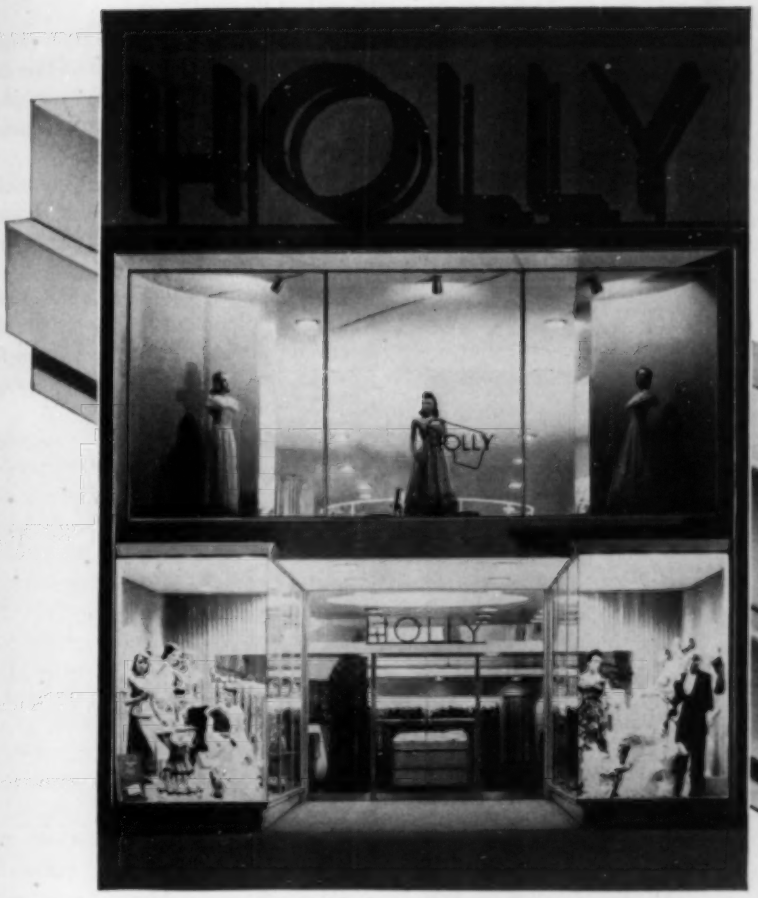

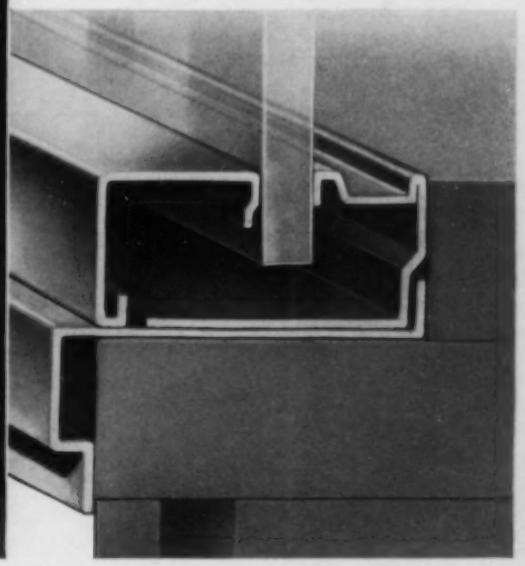

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THE RECORD REPORTS

WASHINGTON (*Cont. from p. 22*)

HHFA Lists Projects

Meanwhile, the Housing and Home Finance Agency is finding that mounting defense activity puts a special emphasis on the objectives of lower costs and economic stability in its own comprehensive research program. The magnitude of the broadened effort is shown in the recent listing of 57 research projects under contract to 35 colleges and universities, other private and nonprofit organizations, and government agencies.

In addition to those previously reported (ARCHITECTURAL RECORD, July 1950), these are the organizations, together with brief descriptions of the research projects they have undertaken:

Miami University (Oxford, Ohio) — extensive study of growth patterns of metropolitan areas.

Pennsylvania State College — study of effect of weather on full-size wood frame structures; study of temperature and humidity effects on selected houses in central Pennsylvania.

University of Florida — pilot study of a mortgage market (Jacksonville, Fla.) to develop techniques for mortgage market reporting and mortgage market analysis.

University of Illinois — determination of minimum standards of household plumbing to effect improvements and simplifications.

University of Miami (Coral Gables, Fla.) — development of technique for forecasting (short term) the market for housing in an industrialized middle-size housing area.

University of Michigan — appraisal of the changes over a period of time in the labor-management relations of the building industry; survey of recent home buyers to determine the relative importance of various factors entering into the transaction.

University of Minnesota — study of temperature and humidity effects on selected houses in the Minneapolis area.

University of Toledo — study of relationship in concrete building units of changes in volume and in moisture content.

Southwest Research Institute will carry on a research project calling for development and testing of economical designs for combined concrete floor slabs and foundations, for unusual soil conditions found largely in the Southwest.

U. S. government agencies under contract for research projects include:

Bureau of the Census — development of statistical method of determining inventory of nation's housing at intervals between census periods.

Department of Agriculture (Bureau of Entomology and Plant Quarantine) — study of various construction methods, including those used in World War II housing projects, as measures of termite prevention; (Bureau of Plant Industry, Soils, and Agricultural Engineering) — testing of soil cover materials for use in basementless dwellings; study of construction practices and effects in the use of wood siding; regional studies of deleterious effects in the use of crawl spaces under dwellings; (Forest Products Laboratory) — preparation of manual on recommended practices for dwelling construction; appraisal of current practices in the construction of frame dwellings to determine extent to which available improvements have been applied and

(*Continued on page 174*)

HERE'S AID TO ARCHITECTS and ENGINEERS in planning SOUND SYSTEMS!

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Builder, CARL M. HANSEN, Minneapolis, Minn.

THE friendly informality of Cedric Adams' newspaper column and news broadcasts have long made his name a household word in Twin Cities homes. Today, a national TV and radio personality, Cedric's easy, comfortable manner and broad smile have won millions of new friends across America.

Recently he built himself a new home in Minneapolis. It was designed from stem to stern for pleasant living. The heating system received the special attention it required in a home of this type—zone control of different living areas to maintain ideal temperature conditions in all rooms at all times.

The Adams home has four properly located Honeywell thermostats. While some homes require but 2, larger homes may require 5 or more thermostats, depending upon the number of rooms, area of ground covered, exposures to sun or storm. But most larger homes can't get along comfortably on one thermostat. The next home you are commissioned to design may be one of them.

In any event, we suggest that you consult your nearby Honeywell field engineer. His broad experience in zone control will serve as an important aid in determining the proper number of controls needed for best results. Meanwhile, write for informative folder, "Residential Zone Control Applications and Specifications."

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REQUIRED READING

MASONRY HOUSE BUILDING

The Masonry House. By Training-Thru-Sight Associates, Inc.: Lee Frankl in cooperation with Structural Clay Products Institute. Duell, Sloan & Pearce, Inc. (270 Madison Ave., New York 16, N. Y.), 1950. 8½ by 11 in. 125 pp., illus. $2.95.

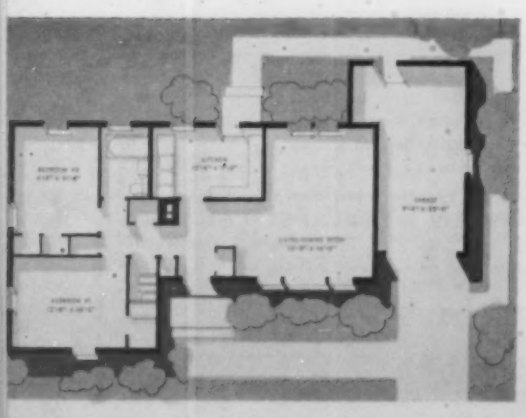
Economies possible in small house construction through use of modular coordination and engineering methods were demonstrated convincingly by the Industry Engineered Homes Program. Now Lee Frankl's organization presents a step-by-step guide showing just how to build a particular masonry house designed according to the principles of this program.

Much of the utility of the book is due to the visual training technique employed: drawings integrated with concise explanatory text answer specific problems involved in building this house. At the same time it contains helpful information for building any masonry house, showing various types of masonry construction, how brick and tile are laid, and simplified floor and roof framing systems. The construction process is covered so thoroughly that anyone who has some degree of mechanical skill should encounter practically no difficulty building the house illustrated or adapting the information to other house plans developed by and available from the Structural Clay Products Institute.

Of particular interest to RECORD readers should be the layouts of the foundation, cavity walls and chimney picturing the combination of brick, facing tile, structural tile and flue linings, all being made in modular sizes. Also of note is the section on roof framing which gives instructions for making the trusses which are assembled by jig at floor level and then tipped up into place — this being one of the major economies brought about by engineered construction methods.

Since the main emphasis of the book is on these engineered methods and their coordination with modular materials, it is appropriate that the first section outlines the basic principles and advantages of the modular system and gives background information on their application in a study conducted in 1947 by the Small Homes Council of the University of Illinois.

Following sections cover the selection of materials, use and care of tools, and on-the-site construction.



Plan of typical house that can be erected by techniques given in The Masonry House

HOUSE BUYER'S PRIMER

Buying A House Worth The Money. By Frazier Forman Peters. Little, Brown & Co. (34 Beacon St., Boston 6, Mass.), 1950. 6 by 9 in. 157 pp. illus. $2.75.

Although this chatty little book is written mainly for prospective house buyers, it might be of great use to the architect trying to convince an over optimistic client as to what type of house he can afford. Most of the text is accompanied by comments on the relative costs and values of different kinds of construction. Architect Peters also has compiled a specification chart of "the standard house," which he classes as having "all the essential qualities of the millionaire's house without the pate de foie gras." Adjacent columns on the chart rate constructions above and below this standard.

This data, coupled with many chapters of discussion constitute an excellent primer of construction for the layman. Houses are analyzed from foundation to roof, including such items as cellar drainage, termites, decay, insulation, vapor barriers, radiant heating and the heat pump.

Unfortunately, Mr. Peters dismisses the question of architectural design with a terse "Which is best? Which is ART? Who cares, so long as you select the one that is YOU." His middle road policies prompt him to refer to contemporary styles as "Modernes." However, he writes glowingly of such new materials as waterproof plywood and metal siding.

Architects are defined as those who are "informed in the technical matters and trained in the art of home midwifery," and who "must crawl as far into your skin as possible, to look out of your eyes, to feel your brain react, and even to study how you sleep."

With the good and the bad, the book stands well above the usual run of manuals aimed to instruct the layman on home building, and deserves a place on the bookshelf reserved for clients.

PLANNING AND RESEARCH

Social Pressures in Informal Groups. A Study of Human Factors in Housing. By Leon Festinger, Stanley Schacter and Kurt Back. Harper & Brothers (49 East 33rd St., New York 16, N. Y.), 1950. 5¾ by 8⅜ in. x + 240 pp. illus. $3.00.

The book is a valuable study of a housing development in terms of group needs and satisfaction of these needs. It has been written from the social psychologist's point of view with the psychologist's method of investigation.

From the architect's and city planner's standpoint, the study's worth is in its thorough evaluation of a housing project. From certain defects and successes alike, salient considerations are presented which would be helpful to one concerned with designing in units for a number of people. The challenge set forth is to create housing whether in small or tremendous units which will fulfill human requirements.

The experiment in this case is M.I.T.'s Westgate, a development sheltering veteran's families, a congregation of people generally in the same age level. Westgate's group structure has undergone an analysis which draws a line of interaction among group functions, homogeneity, cohesion, communication, behaviour, etc.

As architect Robert Kennedy indicates in his chapter, "Sociopsychological Problems in Housing Design," in view of the increased occupancy of housing communities, planners are dealing with a whole new dimension. It is essential now to plan for every need of a *collection* of people rather than for the needs of an individual household. The "city is beginning to be thought of as a constellation of neighborhoods rather than a maze of streets." There is a certain

(*Continued on page 30*)

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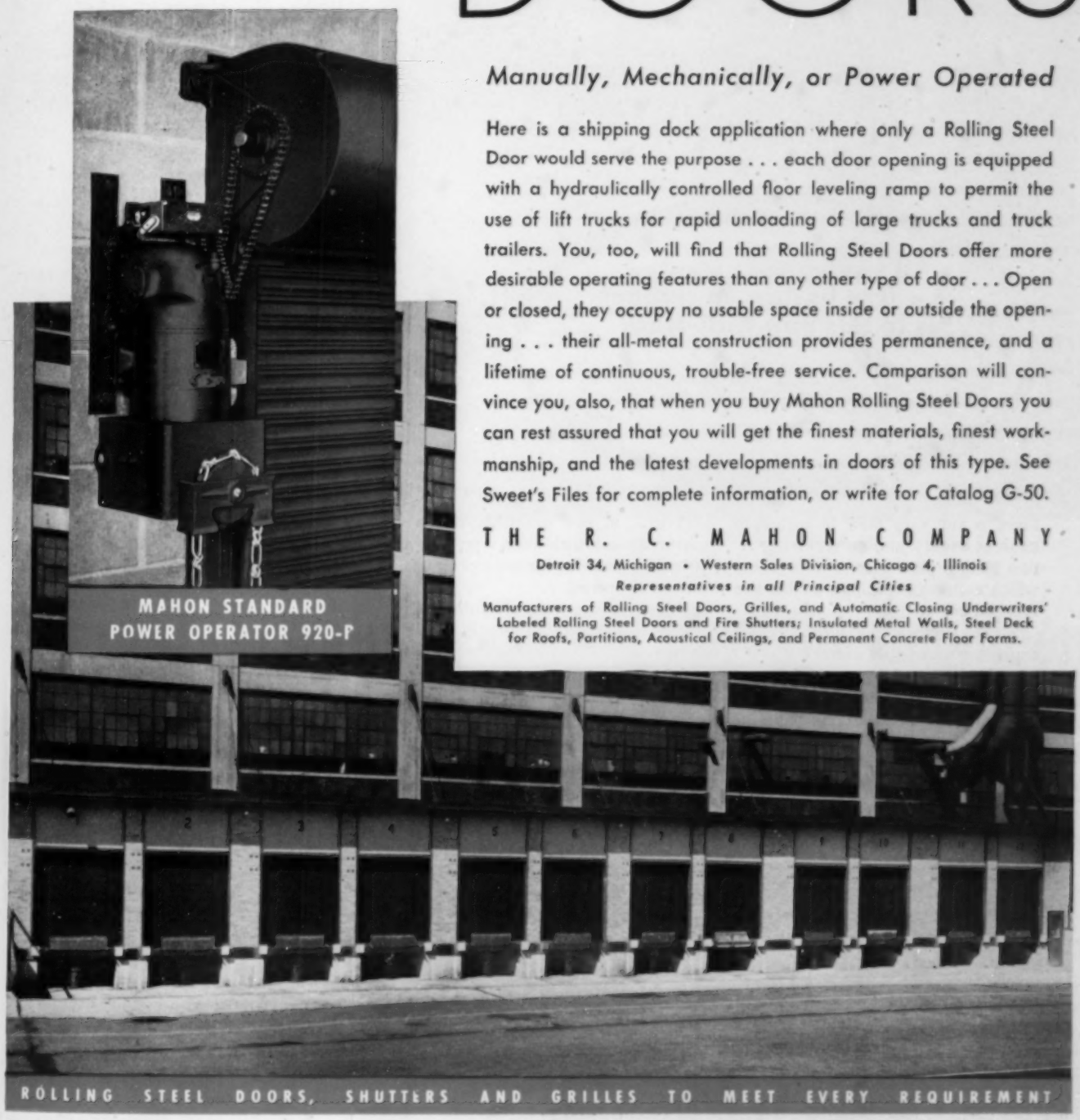

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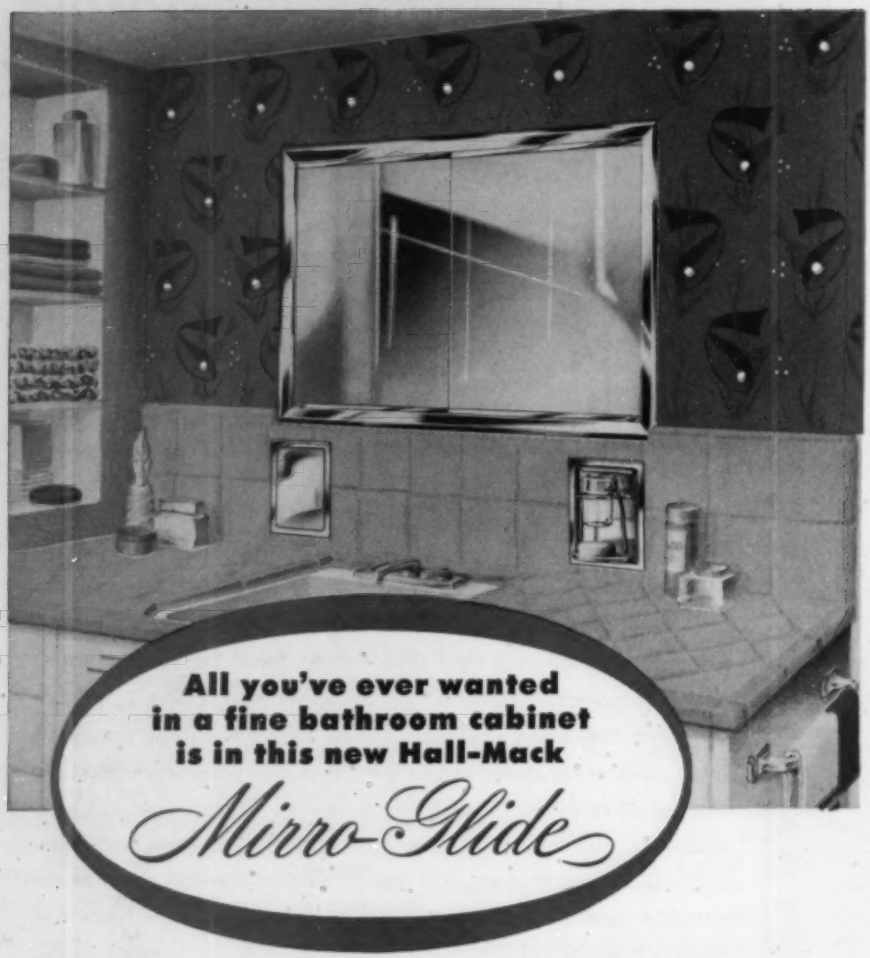

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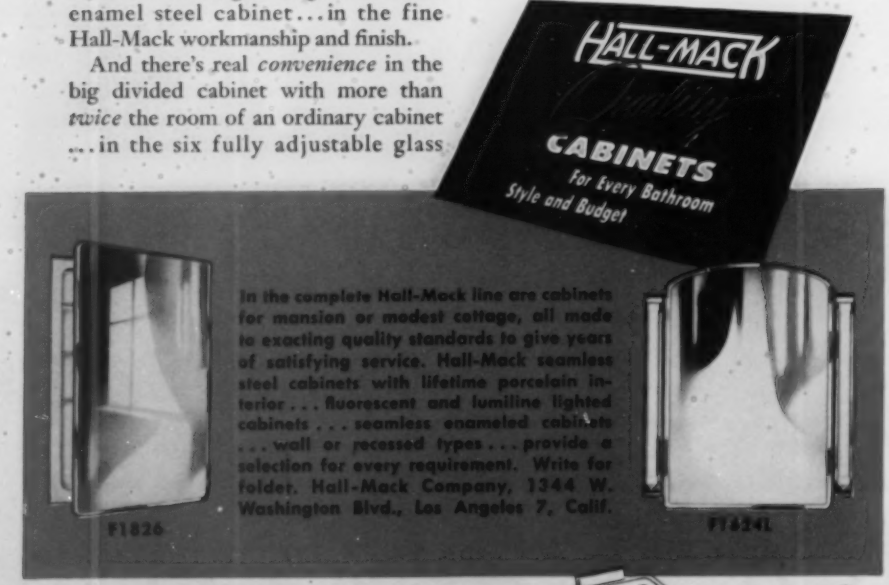
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REQUIRED READING

(*Continued from page 28*)

homogeneity, and the satellite town is studied in terms of economics and design.

What the book suggests is that as long as it is both possible and important to know how people live in relation to their families as well as to others in a housing group, cooperation of the planning and social professions will advance the idea of "optimum standards." Thus these findings of the Westgate researchers will help point out to creators of future developments the means of providing the physical environment for satisfactory living.

Communities for Better Living. Citizen Achievement in Organization, Design and Development. By James Dahir. Harper & Brothers (49 East 33rd St., New York 16, N. Y.), 1950. 5¾ by 8½ in. xiv + 321 pp. illus. $4.00.

In this book James Dahir shows how good planning will produce better community living conditions. He has added his voice to Mr. Lewis Mumford's thesis that giant city housing developments (familiar especially to the New Yorker) are no solution to mal-housing, and that through these the problems of unplanned urbanism are by no means resolved.

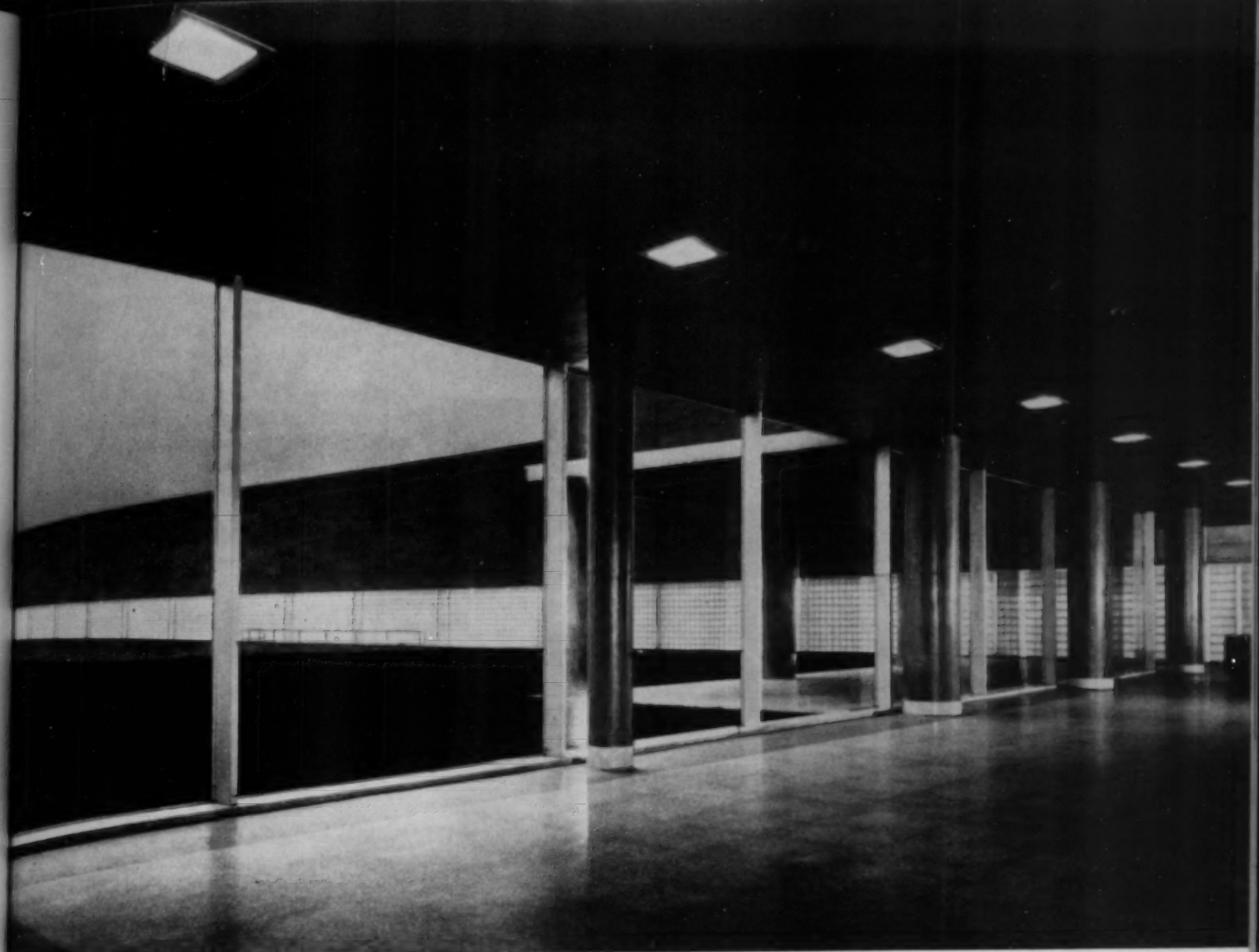
Mr. Dahir explains that the problem does not lie only in the smoke and smog filled *city* thoroughfares; but that the *rural* town, too, has its complexities. (Like Thoreau, in *Walden*, "From the desperate city you go into the desperate country . . .") In studying aspects of both rural and urban living, Mr. Dahir has reported the projects destined to make possible more liveable communities. Having accounted for such factors that contribute to "better living" as recreation centers, shopping centers and local institutions (orchestras, museums, theaters, etc.) he shows his concern for the social as well as physical implications of planned communities.

Further emphasized are the responsibilities of every citizen — not only to apprise himself of what must be done, but also to participate in the doing. Thus in its appeal for organization the book encourages both study and action.

Sources of help for future planning, suggested in the final chapter, include the efforts of government, public schools and social sciences.

Not only has Mr. Dahir shown himself to be a community planner, but in addition, he has revealed the social conscience as a compelling force in creating communities for better living.

(*Reviews continued on page 32*)



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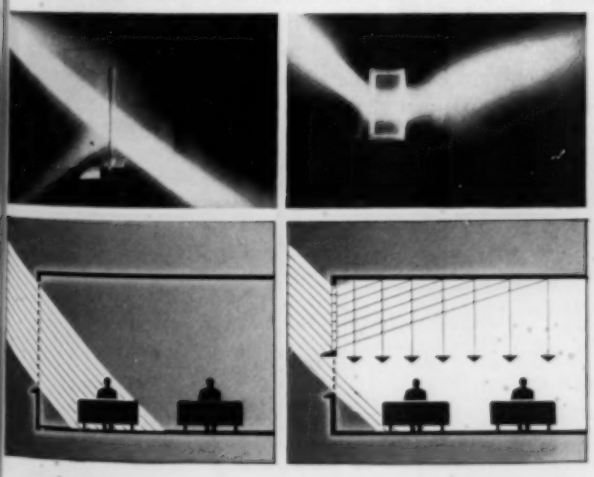

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REQUIRED READING

(Reviews continued from page 30)

NEW EDITIONS

WELDING

Procedure Handbook of Arc Welding Design and Practice. Lincoln Electric Co. (Cleveland 1, Ohio), 1950. Ninth Ed. 6 by 8¾ in. xi + 1200 pp. illus. $2.00 (domestic); $2.50 (elsewhere).

Aimed to aid designers of welded machines and structures, the revised handbook includes the newest procedures for welding all metals and alloys. The structural design section has been enlarged to provide further information on welded rigid framing, and there are new chapters on weldability and welded design data.

FOR TEXT AND REFERENCE

Theory of Modern Steel Structures. Abridged Edition. By Linton E. Grinter. The Macmillan Co. (60 Fifth Ave., New York 11, N. Y.), 1950. 6⅜ by 9½ in. xxii + 424 pp. illus. $6.50.

This text treats such steel structures as industrial buildings, truss bridges (for dead, highway and railway loadings), office and commercial buildings. Included are considerations of lateral and portal bridge bracing, the plate girder, towers and wind bents in tall buildings and other aspects.

Structural Theory. By Hale Sutherland and Harry Lake Bowman. John Wiley & Sons, Inc. (440 Fourth Ave., New York 16, N. Y.), 1950. Fourth Ed. 6¼ by 9¼ in. xiv + 394 pp. illus. $5.00.

"An introduction to the basic concepts and principles of structural theory relating to trusses, rigid frames and space framework." Revisions include the addition of: solutions of compound trusses by the Williot-Mohr diagram, explanation of fixed points in continuous beams, and a consideration of members of varying moment of inertia supplementing the treatment of moment distribution.

BOOKS RECEIVED

China and Gardens of Europe. Osvald Sirén. The Ronald Press Co., New York.

Contemporary Structure in Architecture. Leopold Michaels. Reinhold Publishing Co., New York.

Highways In Our National Life. Edited by Jean Labatut & Wheaton J. Lane. Princeton University Press, Princeton, N. J.

History of Architecture, A. H. Heathcote Stratham. B. T. Batsford, Ltd., New York.

Museum Buildings. Laurence Vail Coleman. American Association of Museums.

Plant Layout and Materials Handling. James M. Apple. The Ronald Press, New York.

Urban Pattern, The. City Planning and Design. Arthur B. Gallion in collaboration with Simon Eisner. D. Van Nostrand Co., Inc., New York.

BUILDING RESEARCH AND MODULAR COORDINATION ARE NEEDED NOW

THE prospect that a substantial portion of our national productivity will be devoted to defense measures for several years to come makes the reduction of non-defense spending mandatory. In the budget-paring process, there will be a temptation to eliminate expenditures that will not produce tangible, or at least measurable, results from one fiscal year to another, especially where long-term benefits are not readily apparent. Building research may well appear to be in this category, and recent actions of Congress indicate that the research program of the Housing and Home Finance Agency will operate next year on a greatly reduced budget unless the importance of a continuing research program can be impressed upon the appropriations committees.

The National Defense Committee of the A. I. A. has taken the position that the present emergency calls for an intensification of the technical research program in housing, rather than a curtailment. ARCHITECTURAL RECORD concurs in this view. The probable extended duration of the defense emergency will not permit the country to construct stop-gap facilities on anything like the scale assumed during World War II. Victory in Korea will not "end the war," as it was hoped V-J Day would do. Wherever immediate, pressing, military demands will permit, we must coordinate emergency aspects of building with long-term considerations so as to conserve overall capital resources. Continuance of a housing research program contributes directly to this end.

A sound technical research program must include the study of procedures to facilitate application of research results to actual design and construction. To this end, efforts to promote the adoption of modular coordination throughout the building industry are a definite part of the program. Many architects have resisted use of the system in preparing plans because modular products are not universally available. On the other hand, many manufacturers have stated they will not convert to modular sizes until there is more demand for them by architects and engineers. Now is the time to break this circle and proceed toward realization of the building operation as an assembly process using dimensionally coordinated materials and equipment.

Necessity for conservation of our productive resources will not permit us to continue wasting materials by cutting and fitting on the job, when this waste can be so largely eliminated by modular dimensioning of plans and the use of modular products. Neither can we afford the wastage of labor necessary in wasting the materials.

The modular coordination concept is based on many years of sound research. Its acceptance has undoubtedly been hampered by the scientifically accurate but somewhat forbidding name. Nevertheless, the concept is not a complicated one, as the current educational campaign sponsored by the A. I. A., Producers' Council, N. A. H. B., and HHFA seeks to demonstrate. The articles on modular coordination which have appeared in ARCHITECTURAL RECORD over the past few months, as well as the Time-Saver Standards in this issue, are also dedicated to this point of view, and to the belief that modular coordination offers an industry-wide basis for increasing the efficiency of building design and construction.

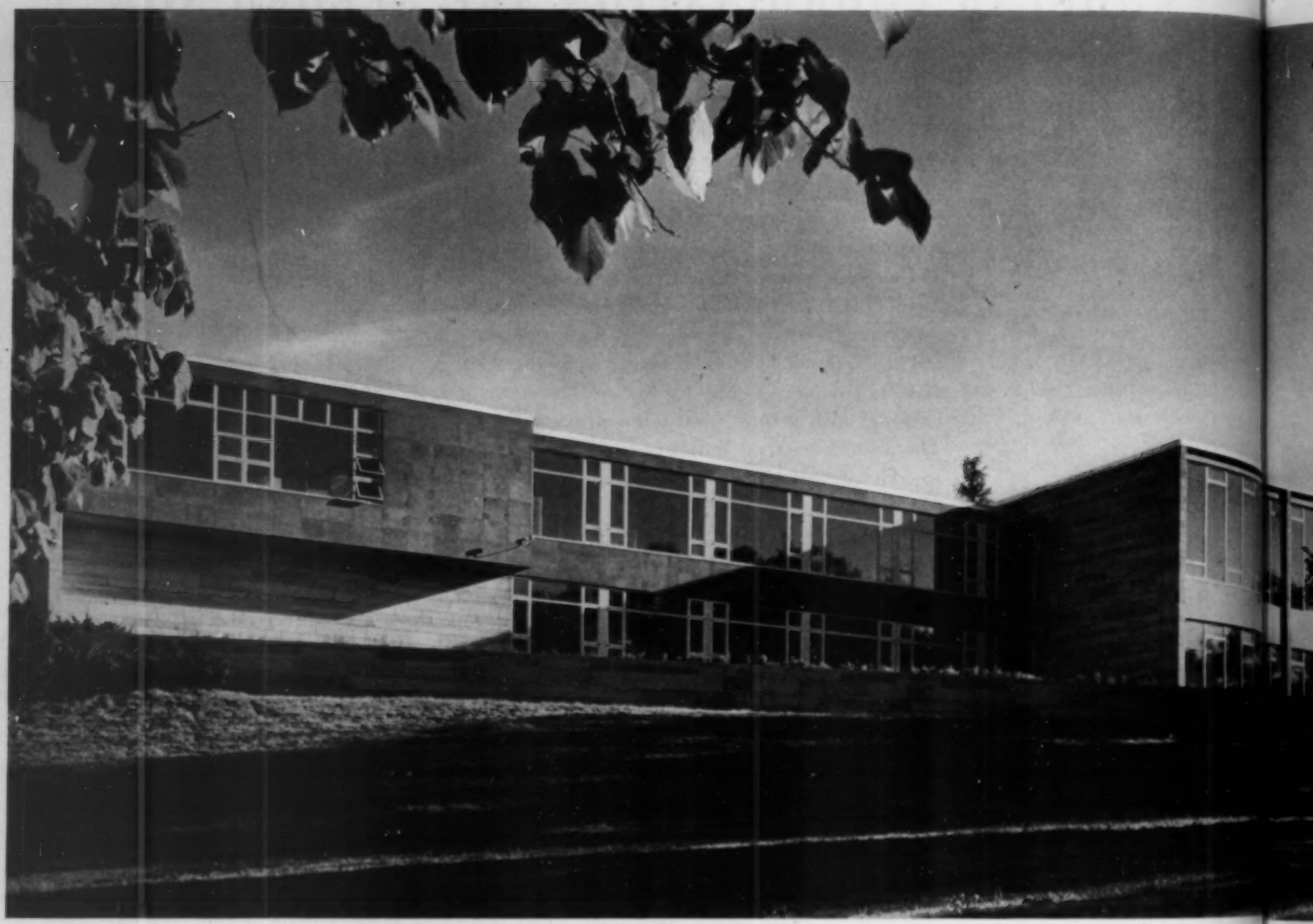
Harold D. Hauf

Editor-in-Chief

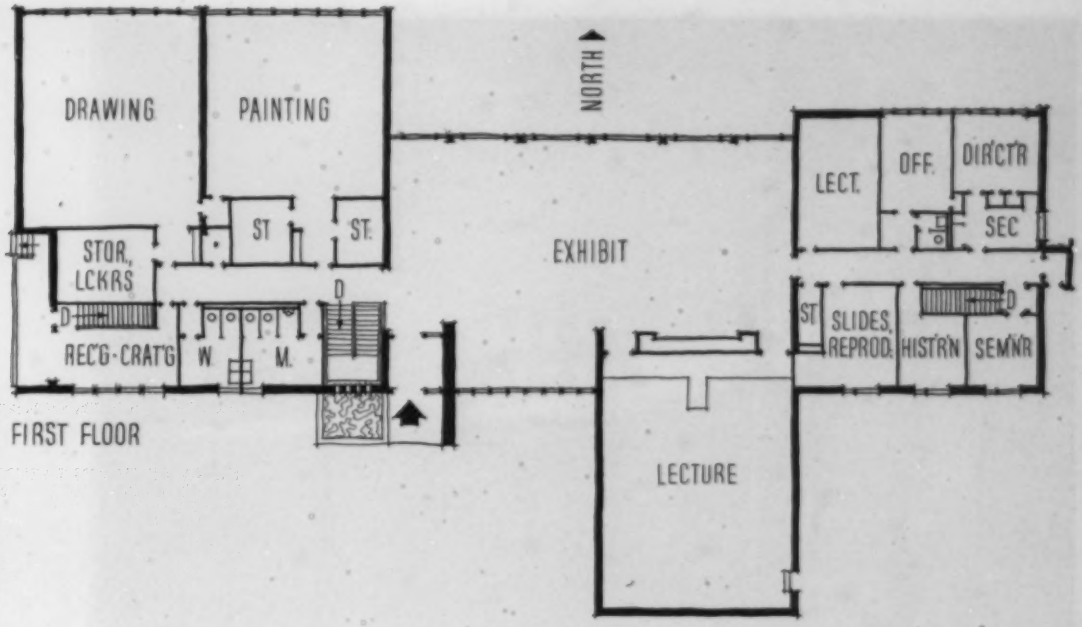
ART BUILDING, CARLETON COLLEGE

Boliou Hall, Carleton College, Northfield, Minn.

Magney, Tusler & Setter, Architects



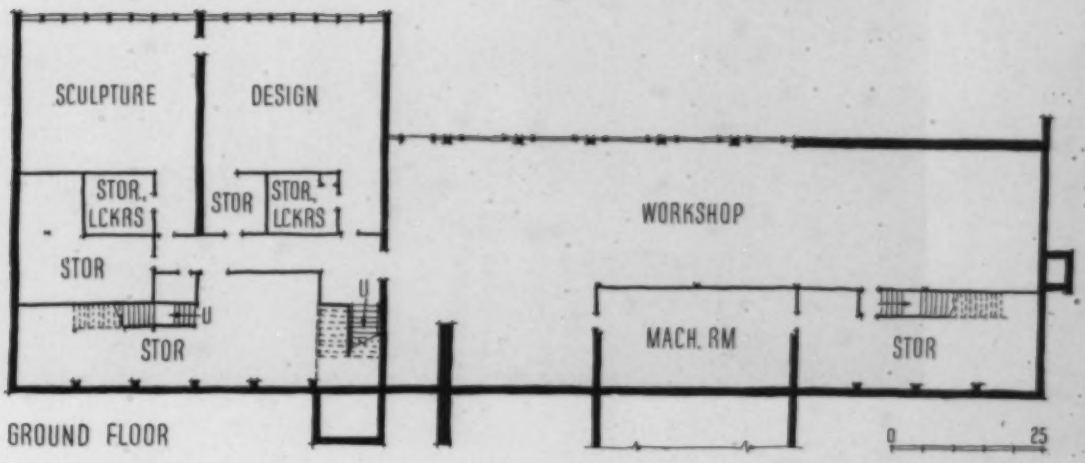
Photography Inc. photos

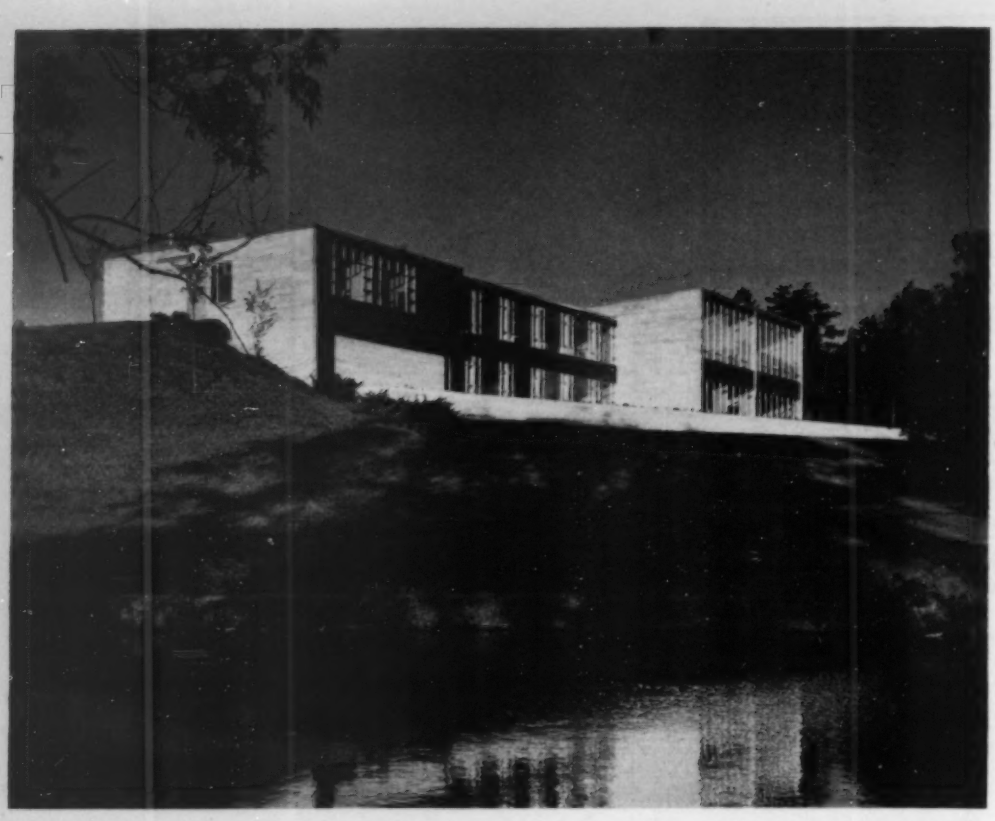


An art building for a small college should be one of the pleasantest of commissions for architects, and that is what this one proved to be, for the architects enjoyed the full sympathy and understanding of their clients. As a result the building, though small, shows an unusual freedom both in plan and in expression.

The plan places the exhibition space as a connecting link between faculty offices and teaching studios, a deliberate reversal of the principle that a useful room should not be a traffic thoroughfare. Here professors, students and visitors are led past or through the exhibits, and the work gets far more attention than if isolated. The idea works especially well in connection with the large lecture room, which is used by other college classes than art; its doors open directly to the exhibit space, to lead other students through the exhibits. This little scheming by the designers has worked out well. In fact they got an extra dividend, in that students use the same room for lounging.

Fortunate also is the location of the building. It faces north, and overlooks a pleasing series of small lakes. This little chain forms a snug valley, the building set into a slope at the valley end and getting a handsome view along with the treasured north light. It's all very pleasant, even if not especially conducive to the more introverted expressions of experimental art.



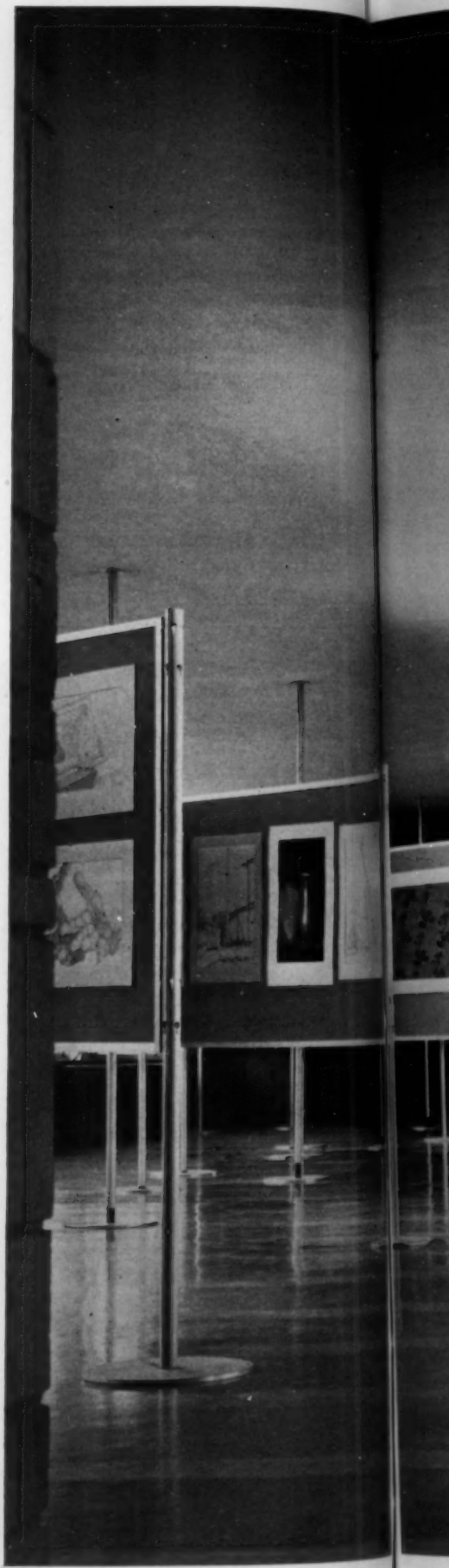


Students seem able to resist the temptation to paint landscapes, even though the setting of Boliou Hall abounds in natural beauty, with a chain of little lakes leading away to the north

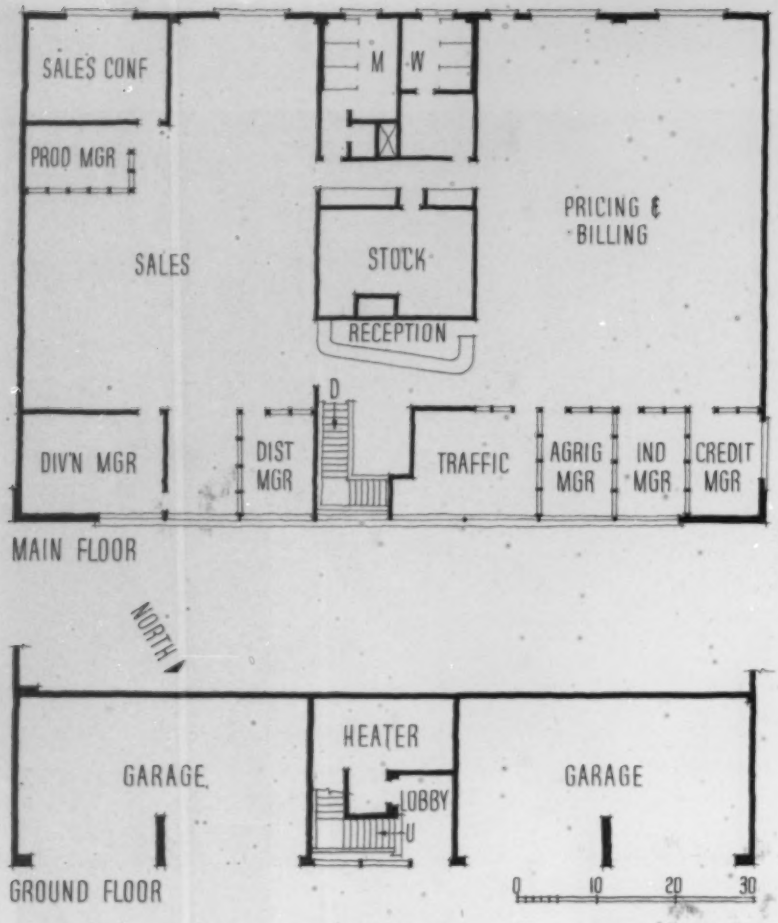
Photography Inc. photos

The art building is set into the side of a low hill. Its main entrance is at the top of the rise on the upper level. Lower level, with huge windows to the north light, has entirely different aspect

To make "hanging" as easy as possible, a simple, tool-free system was designed. Pictures are hung on 4 by 4 ft or 4 by 8 ft hollow-core veneered sheets, framed in aluminum. Buttons on the ends of the frame are set into key slots in aluminum poles. Some of the poles stand in bases on the floor; others are screwed into metal cups in the ceiling. The longer pole becomes a pivot, about which the frames and standing poles can be swung around to any desired position

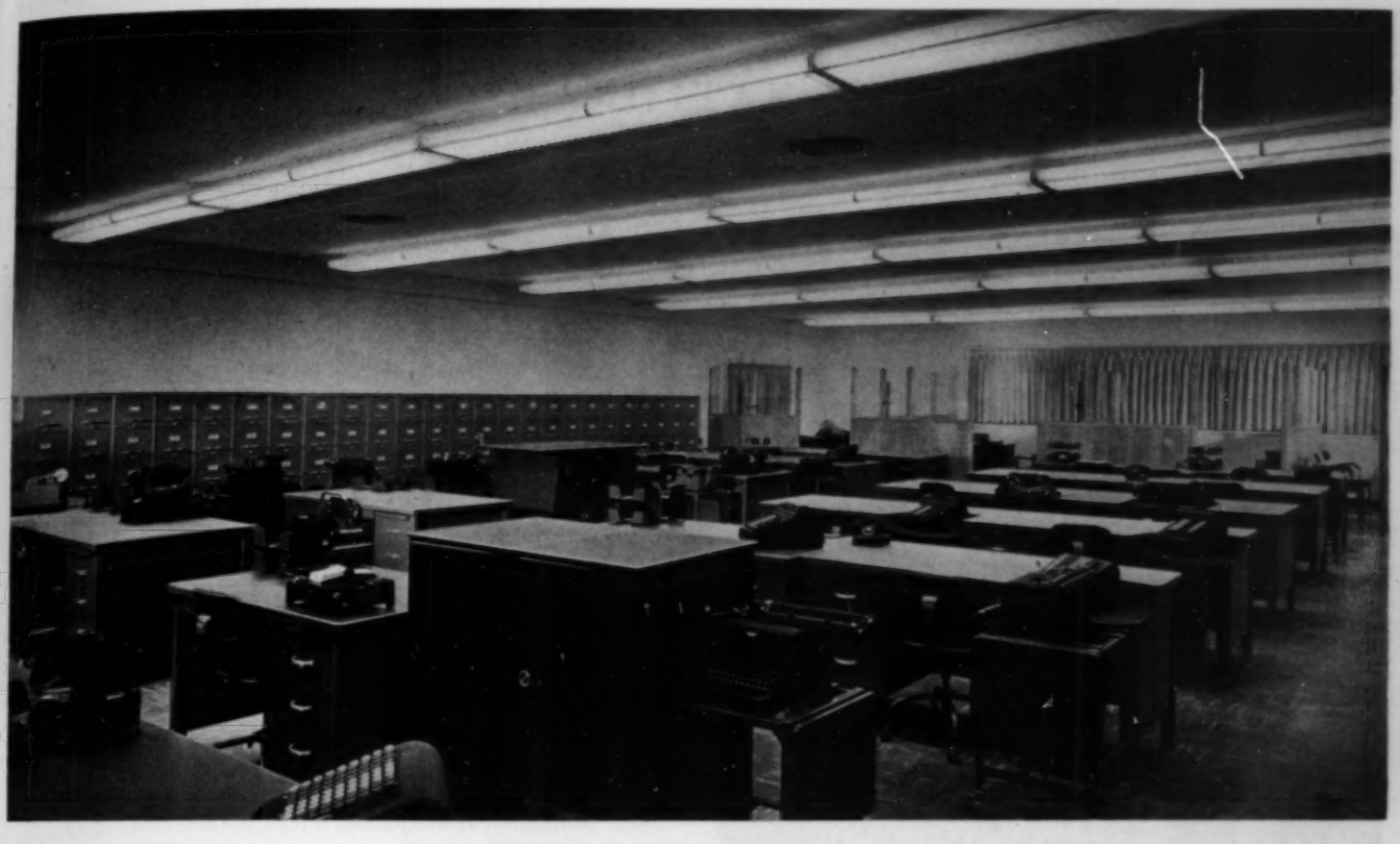


Photography Inc. photos



Robert C. Cleveland Photos

WEST COAST OFFICES F



FOR U. S. GYPSUM CO.

Geo. W. Carter Co., Owners and Contractors

Cejay Parsons, Architect

William M. Taggart, Structural Engineer

John Grady Co., Electrical Engineers

In Los Angeles new office buildings are required to provide parking space for one car for each 1000 sq ft of office space, and occasionally the law has odd effects on building design. In this instance the lot was steep, so that the parking requirement dominated the development of the site: the parked cars occupy the first floor, the offices being pushed up to the second.

The building was erected for the occupancy of the U. S. Gypsum Company, but the developers retain the ownership.

Since the principal facade is to the north, large continuous steel casements, with fixed plate glass sections, were made up (in special sizes) to afford a maximum of natural light, but the two sides of the building are without windows and the rear fenestration was subdued because of the south exposure. Front of the building is red Roman brick, laid vertically on the lower portion and horizontally above. Acoustical tile ceilings with flush mounted continuous fixtures carry throughout the office space. Roof construction is a series of curved chord wood trusses, spanning the entire depth, so that partitioning can be placed with complete freedom.

RIO GRANDE NATIONAL LIFE BUILDING

Dallas, Texas

Grayson Gill, Architect

George Foster Harrell, Consulting Architect

Zumwalt & Vinther, Mechanical Engineers

Chappell, Stokes & Brenneke, Structural Engineers

In recent years architects planning office buildings have done much experimenting with sun and light control, fenestration, column arrangements, newer materials, not to mention styling. Here all of these things were considered and explored, but in the end two highly functional considerations led to conventional window openings and spacing. One was economy of first cost and maintenance; the other was flexibility for partitioning the space for offices. In this scheme, column spacing the long way of the building is 18 ft, and a nominal 16 ft in the other direction. Thus the space module is 9 ft, a good dimension for a minimum office with one window, air conditioning unit, and so on. All equipment and lighting is installed to keep this unit intact no matter what the partitioning layout, but it is still possible to put a partition any place between windows.

An earlier project for this narrow site had called for a 22-story building, but the analysis for this project showed that the most profitable development would be a 16-story building. This could be served by only four elevators, which could be grouped in a shallow core in the "dark" space at the property line. Bed rock being about 25 ft below the street, there was an advantage in providing two basements, to save further in the development of "rentable" space on a narrow lot.

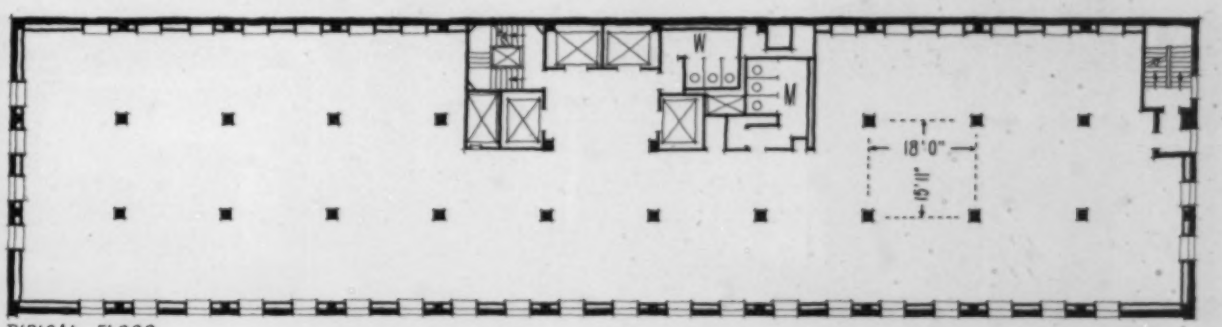
The exterior on the three street sides is veneered with limestone; the stone on the narrow ends is the darkest Indiana limestone; that on the long side is the whitest. A stone band or frame around the wide front is a continuation of the darker stone. The walls are entirely flush, with no window sills or drips, since Dallas is remarkably clean, due to universal gas heating. The resulting simplicity of the stone work made the price quite favorable.

The stone veneer is protected by concealed expansion joints both vertically and horizontally, since experience with air conditioned buildings has demonstrated that

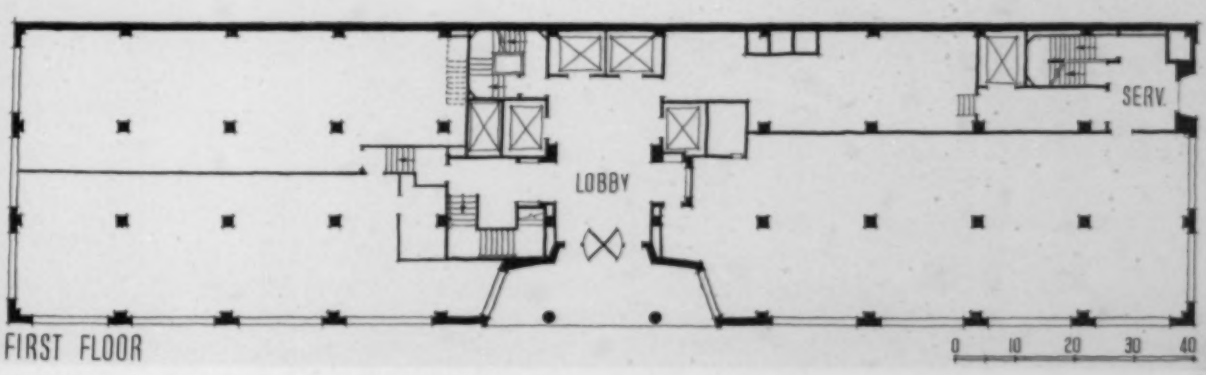
Photo Associates: Ulric Meisel Photos

extreme temperature differentials between outside wall and furring frequently result in strain cracks. Plaster furring and ceilings have been protected by metal beaded joints, to permit contraction and expansion and shearing of planes without unsightly diagonal cracks.

It is interesting to note that the increased stature of the life insurance company, by virtue of this building, has already been reflected in sales.



TYPICAL FLOOR



FIRST FLOOR

Seventeenth (penthouse) floor has offices for executives of the life insurance company. Unpartitioned office view, below, shows modular units of windows, air conditioner, lighting on 9-ft centers so that partitions can be put anywhere without alterations

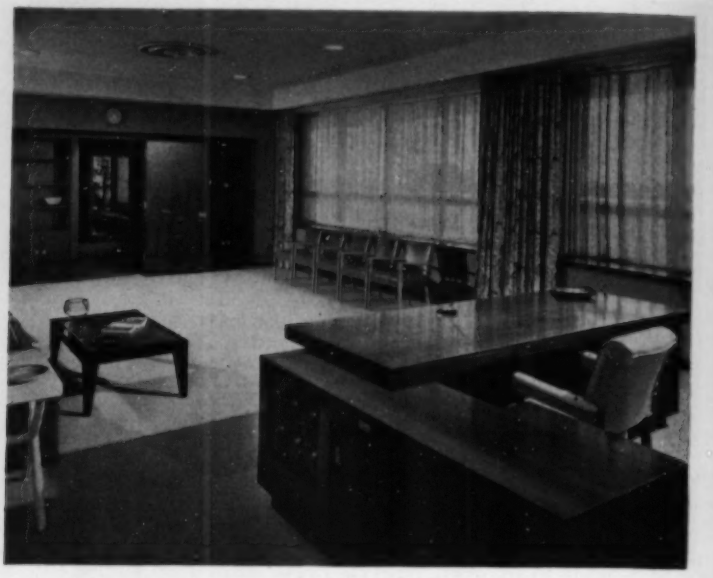


Photo Associates; Ulric Meisel Photos

Aero Photo Surveys

Terminal facilities for the Oahu Transport Co., Ltd., Sand Access Road, Kalihi Kai, Honolulu, T.H. Law & Wilson, Architects-Engineers

ARCHITECTURE IN HAWAII

PART II

Prepared in collaboration with

THE HAWAII CHAPTER

AMERICAN INSTITUTE OF ARCHITECTS

THE busy trucking terminal shown above could be that of any major port in the world. Its facilities are grouped for maximum efficiency and for minimum interference with ordinary city traffic. Quite obviously, it is a part of modern city planning — but there is nothing about it to indicate that it serves the glamourous mid-Pacific city of Honolulu. In that respect it is a perfect example of contemporary architecture in Hawaii.

Hawaii's architecture today is basically that of the continental United States. The mild climate, the magnificent scenery, and the difficulty of obtaining certain building materials all have their effect on design, but the planning itself is intrinsically the same.

This two-part study of architecture in the Islands has been prepared with the collaboration of the Hawaii Chapter of the American Institute of Architects. It has been planned to show as many and as varied examples as possible of the work of the Chapter's 42 members. It is, quite simply, a panorama — a glimpse of what the profession is doing far out in the Pacific. Later issues of ARCHITECTURAL RECORD will present in detail some of the buildings shown sketchily here, and others omitted in this study because of space limitations.

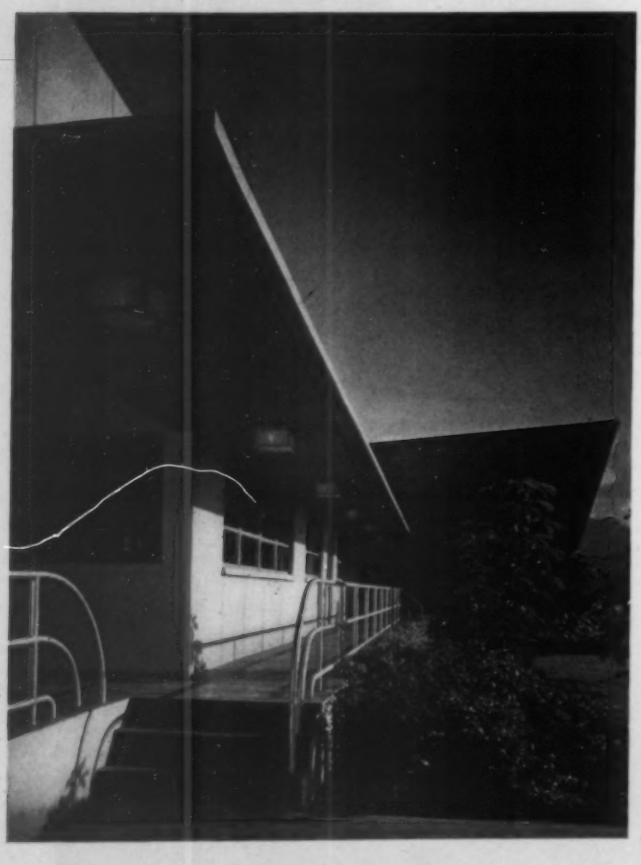
TERMINAL FOR OAHU TRANSPORT CO., LTD., HO

Law & Wilson, Architects, Engineers, Surveyors

THE Oahu Transport Company's new terminal was designed chiefly for the handling of pineapples and sugar. Covering more than 15 acres of reclaimed land, it provides warehouses, shops, offices, recreation and locker rooms, machine shop, service station, etc.

The office and locker buildings stretch across the front of the lot, with the main entrance to the terminal between them (center in photo below). Warehouses, and truck maintenance facilities are to the rear, adjoining the large truck and trailer parking area.

R. Wenkam photos



D., HONOLULU

Foundation—Concrete

Framing—Steel

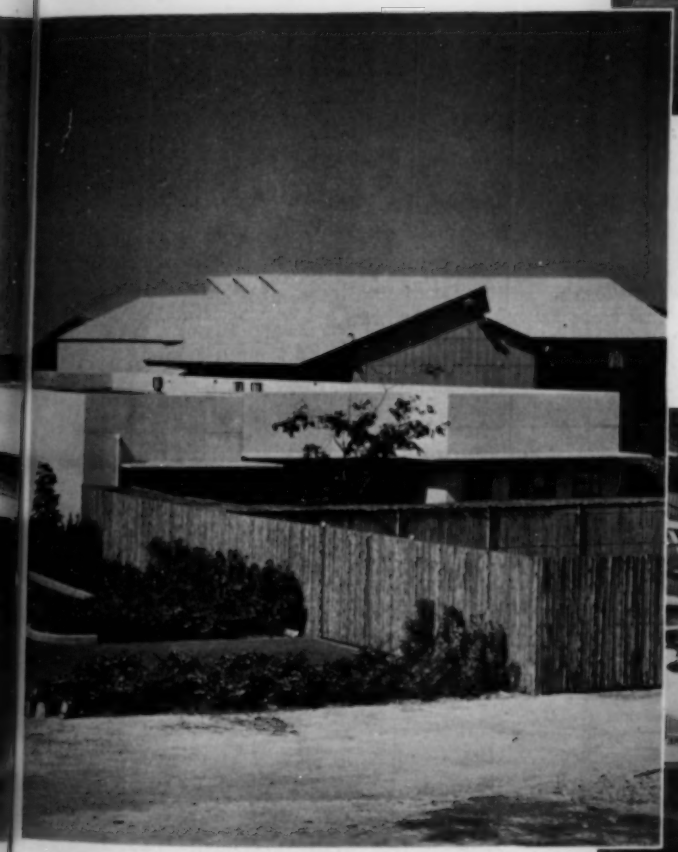
Exterior walls—Poured concrete

Interior walls—Exposed concrete; plaster and metal lath

Roof—5 ply built-up and gravel

Floors—Concrete, waxed

Ceilings—Exposed concrete



Large sign panel draws the visitor directly to main entrance of office building. Beyond it are personnel department, supervisors' offices, and, at far end of building, overlooking entrance driveway, dispatcher's office. Below: the centrally located shop building

MEDICAL ARTS BUILDING, HONOLULU

R. Wenkam photos

Kawâhara Nursery & Landscaping Co., Landscaping

SITUATED about a mile from traffic-congested downtown Honolulu, this Medical Arts Building is occupied by 10 doctors, each a specialist in his own branch of medicine. Each has his own suite of offices, with direct access from the 45-car parking area at the rear. Four of the suites are on the first floor (plan opposite), and five are on the second floor. The x-ray suite, laboratories, and two minor operating rooms are on the basement level.

The building is painted a soft gray-green throughout except for the eave soffits and lanai ceilings, which are a dark blue-green. The elevator penthouse enclosure is of copper louvers. Cream colored veined marble faces the free-standing columns on the front and is used also on the solid walls enclosing the main stairwell. Interior walls and ceilings are painted in tans, greens and grays.

Kenji Onodera, Architect

Dr. Richard Y. Sakimoto, Owner

Foundation—Concrete.

Framing—Concrete

Exterior walls—Structural tile, plastered and painted

Interior walls—Plaster, painted

Roof—5-ply felt, pitch and gravel

Interior partitions—Plaster on metal lath on channel studs

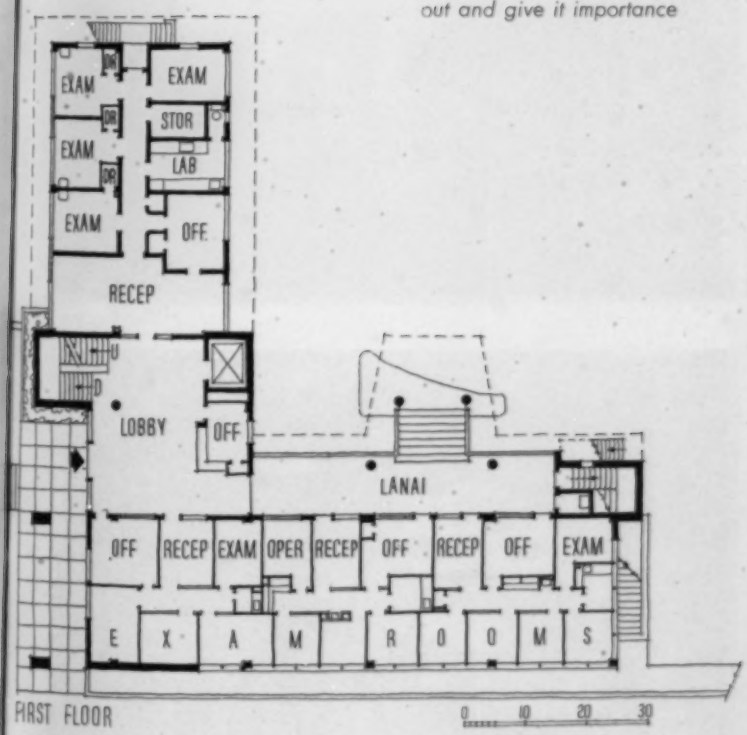
Floors—Concrete

Ceilings—Acoustic plaster

Sash—Steel

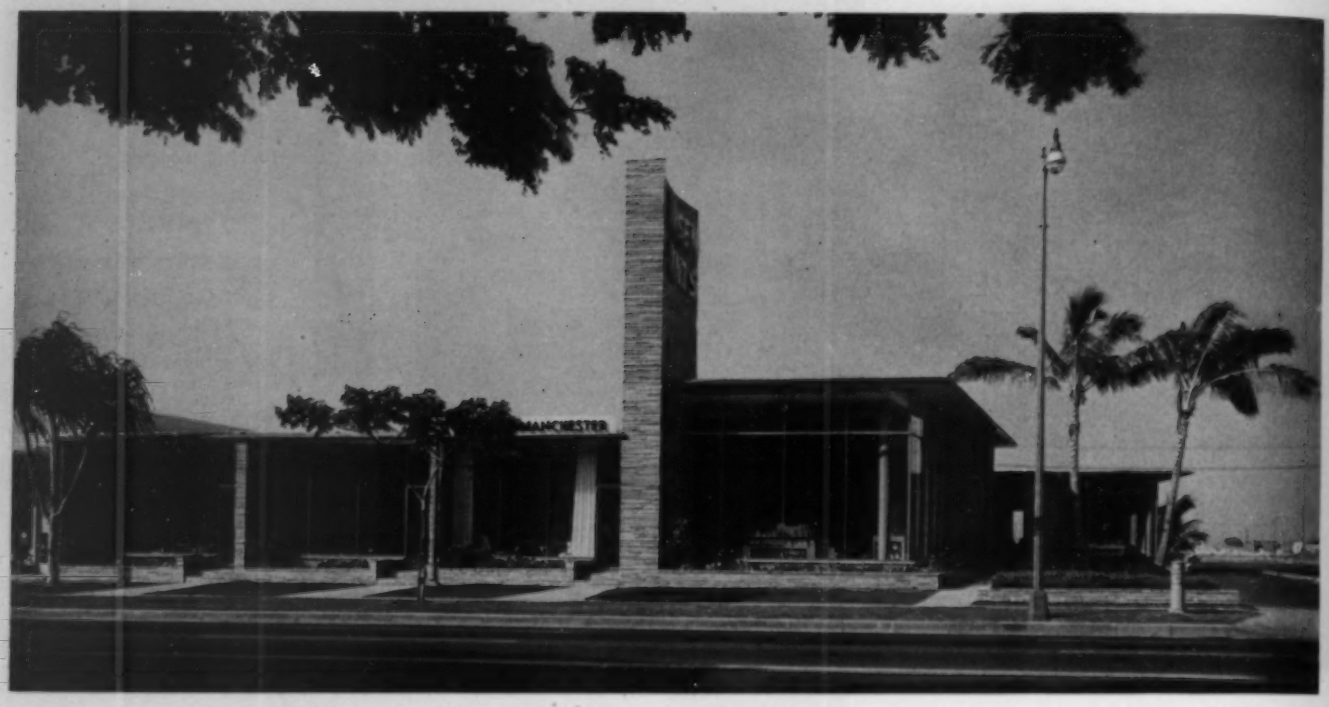
Entrance doors—Aluminum

Building's real "front door" is at the rear, facing the parking area. Broad stairs and a cantilevered porte cochere mark it out and give it importance



FIRST FLOOR

WALTER N. BOYSEN CO. (HAWAII), LTD.



R. Wenkam Photo

Cyril W. Lemmon, Architect

Douglas Freeth, Associate

Lo & Katavolos, Engineers

Wilbert Choy's Makiki Nursery, Landscape Architects

Ben Pang Photo

THE Boysen Company's Honolulu building was planned not merely as a local outlet store, but as division headquarters for the Pacific trade. Provision had to be made, therefore, for easy space expansion as required. The solution was this one-story building consisting of five stores and a warehouse; three of the stores are "in reserve," and will be leased to other firms until such time as the owning company needs more space.

Foundation — Concrete piles

Framing — Reinforced concrete

Exterior walls — Sandstone

Interior walls — Plaster

Interior partitions — Hollow tile

Floors — Flagstone

Ceilings — Concrete

Sash — Steel

Store fronts — Bronze

Billy Howell Photo

SEARS, ROEBUCK & CO., HONOLULU

Ben Pang Photos

Guy N. Rothwell, Architect

Edmund C. Abrams, Associate

IN appearance a two-story building, this Honolulu store has three selling levels and a total of about 200,000 ft of floor space. It was pushed a full story underground to keep it in scale with its contemporary neighbors.

Truck ramp and freight entrance are on the principal street front (left). Off-street parking areas can accommodate 500 cars.

Foundation — Reinforced concrete

Framing — Reinforced concrete

Exterior walls — Reinforced concrete, plastered

Interior walls — Plaster

Roof — 5-ply asphalt and felt

Floors — Reinforced concrete

Ceilings — Metal lath and plaster

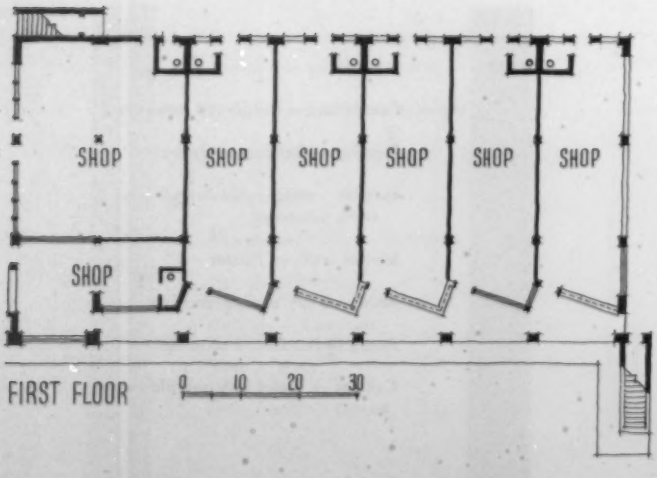
MC CULLY SQUARE BUILDING, HONOLULU

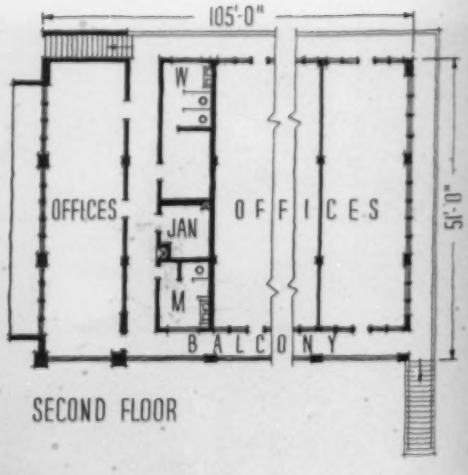
Wimberly and Cook, Architects — *R. E. Welton, Owner*

One of the outstanding characteristics of Honolulu's newer business buildings is the almost universal provision for off-street parking. Wherever possible, the parking area is accessible from two streets; almost invariably it serves as the main approach to the building it serves.

This office and store building on the fringe of the Waikiki business section was planned for rental. Like most of its contemporaries, it is two stories in height and fronts on a generous parking area. Shops occupy the lower floor, offices the upper. As is not uncommon in the Islands, there are no interior halls; each shop has its own entrance, and the office suites above are reached by stairs leading directly to the balcony corridor which connects them. The balcony extends out over the angled show windows of the shops to shield them from the sun's glare; the balcony roof does a similar service for the office windows on the second floor. Louvers above and below the windows provide the essential air circulation.

To avoid the frequently displeasing effect of many-sized signs, the architects provided a sign strip running the full length of each level





Foundation — Concrete

Framing — Concrete and wood

Exterior walls — Concrete and concrete block, painted

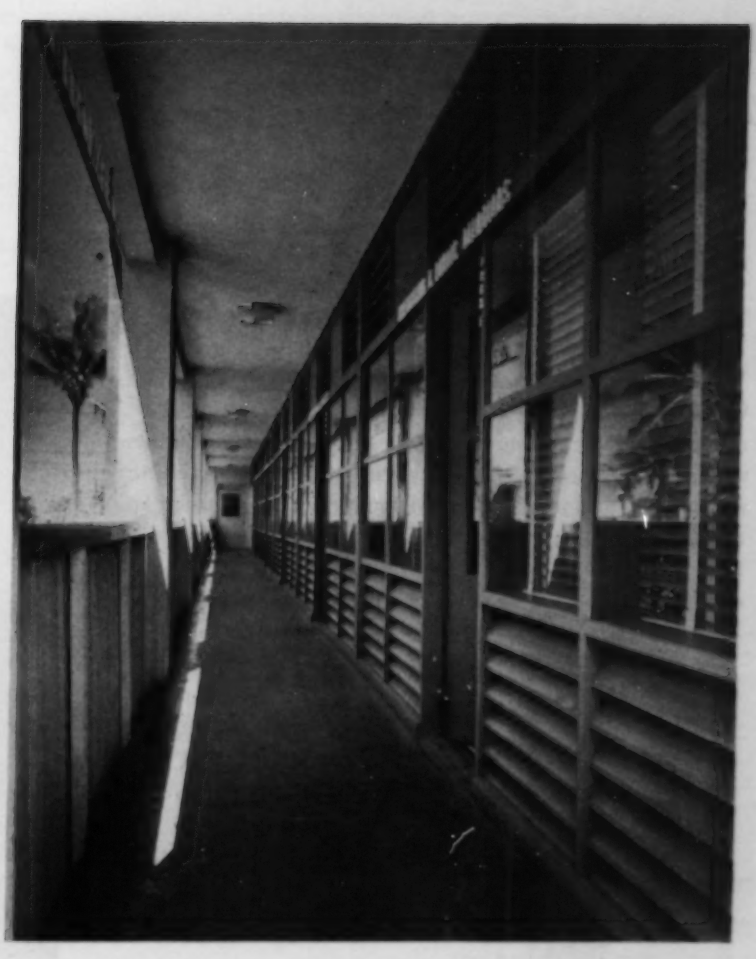
Interior walls — Plaster, painted

Roof — Built-up

Floors — Wood

Ceilings — Plaster

Sash — Wood



R. Wenkam Photos

LOUNGE AND LOCKER BUILDING, PEARL HARBOR

Public Works Office, Navy Yard, Pearl Harbor, T. H.

J. B. A. Van Oort, Department Head Architect

Tom Litaker, Job Captain Architect

THIS Lounge and Locker Building in the Navy Yard at Pearl Harbor was designed and built during World War II as an annex to the existing Pearl Harbor Officers Club. Because of wartime material shortages, it is of all-wood construction, using as few critical materials as possible. Special features permitted by the climate include continuous fixed wood louvers (very popular in the Islands during the war because of blackout restrictions), screened openings and folding doors for the control of air circulation on the trade wind side.

Foundation — Concrete

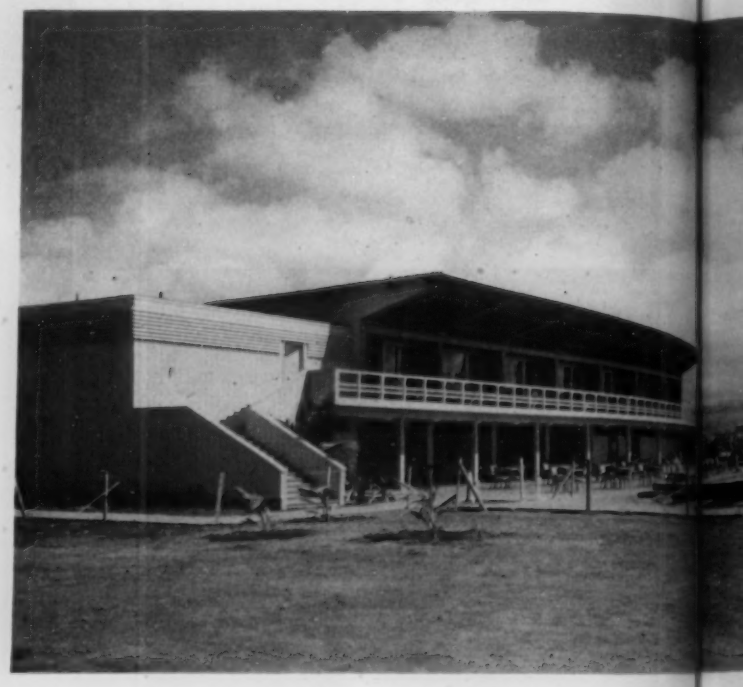
Framing — Wood

Exterior walls — Wood, painted

Interior walls — Plywood, wiped

Roof — Built-up tar and gravel

Floors — Concrete (first); hardwood (second)



Official U. S. Navy Photo

AUDITORIUM, JOHN H. WILSON PLAYGROUND

THE roofline of this playground auditorium has a definitely Oriental air about it, but it was designed with sheer practicality in mind: its long, overhanging eaves give maximum protection from sun and rain.

The building is situated on a hillside overlooking the city of Honolulu, and is in the center of an area which is used entirely by Hawaiian homesteaders. It contains no windows whatever: wooden jalousies were used throughout to minimize destruction by the children and to give the maximum amount of light and ventilation.

Foundation — Concrete

Framing — Douglas Fir

Exterior walls — Redwood

Interior walls — Redwood

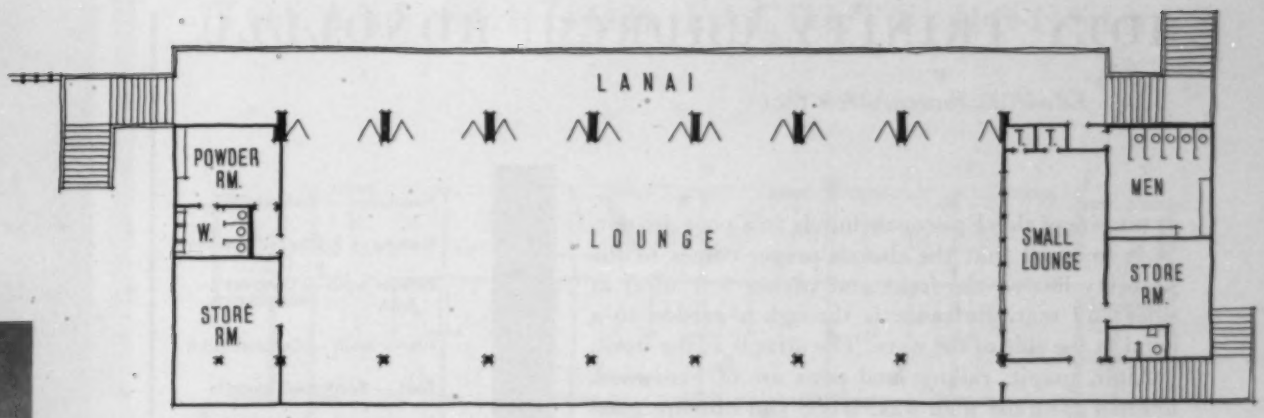
Roof — Wood shingles

Interior partitions — Redwood

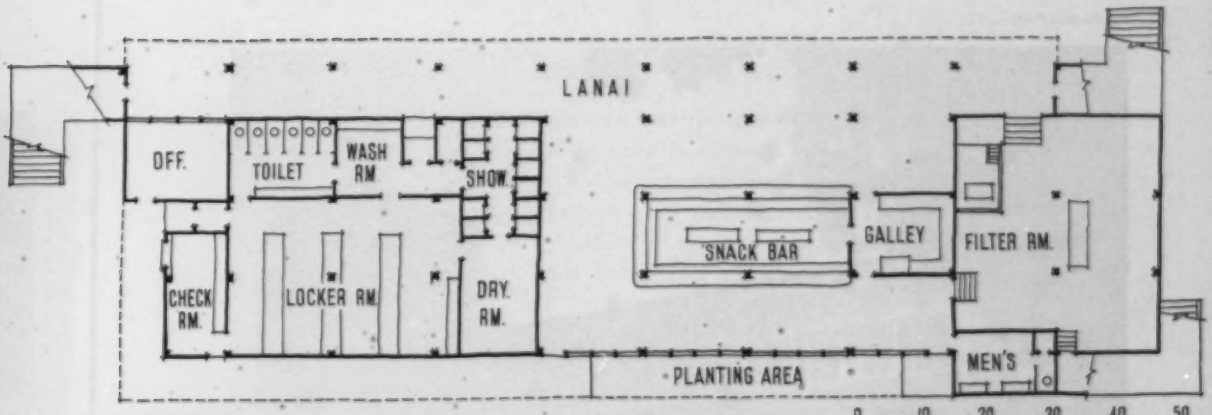
Floors — Wood

Ceilings — Redwood

R. Wenlam Photo



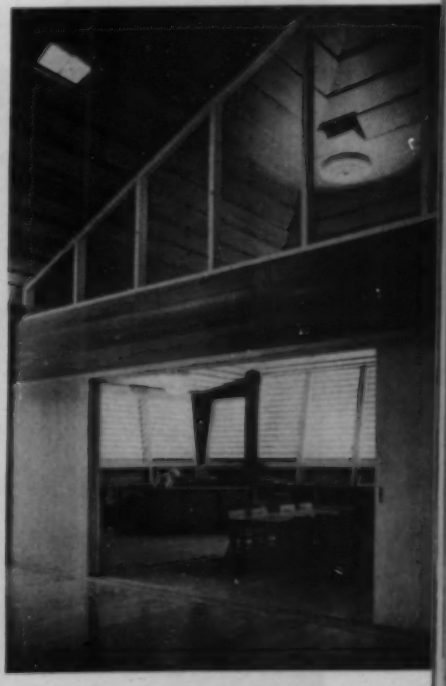
SECOND FLOOR



FIRST FLOOR

Ernest H. Hara, Architect

Yoshio Kunimoto, Structural Engineer



HOLY TRINITY CHURCH, HONOLULU

Edwin L. Bauer, Architect

THE site of this Episcopal church, in a poor district, is so small that the church proper comes to the property line at the front and within 5 ft of it at sides and rear. Entrance is through a garden to a lanai at the side of the nave. The altar is at the front.

Altar, pulpit, railings and pews are of hardwood, finished naturally with wax. Wood and obscure glass louvers in alternating patterns provide ventilation.

Foundation — Concrete

Framing — Reinforced concrete

Exterior walls — Concrete brick

Interior walls — Concrete brick

Roof — Reinforced concrete

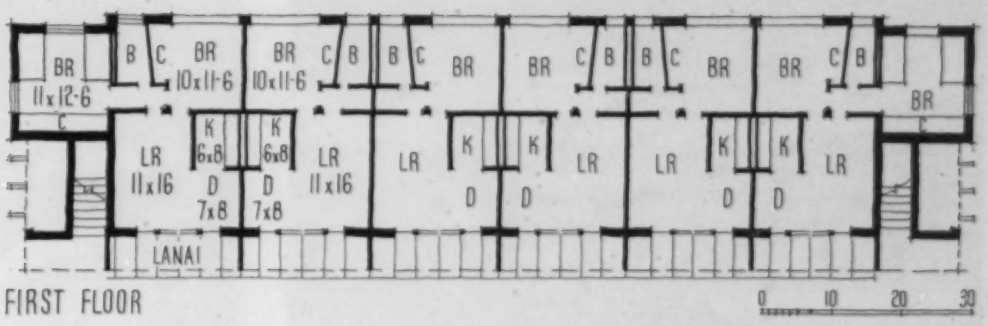
Floors — Reinforced concrete

Ceilings — Acoustic tile

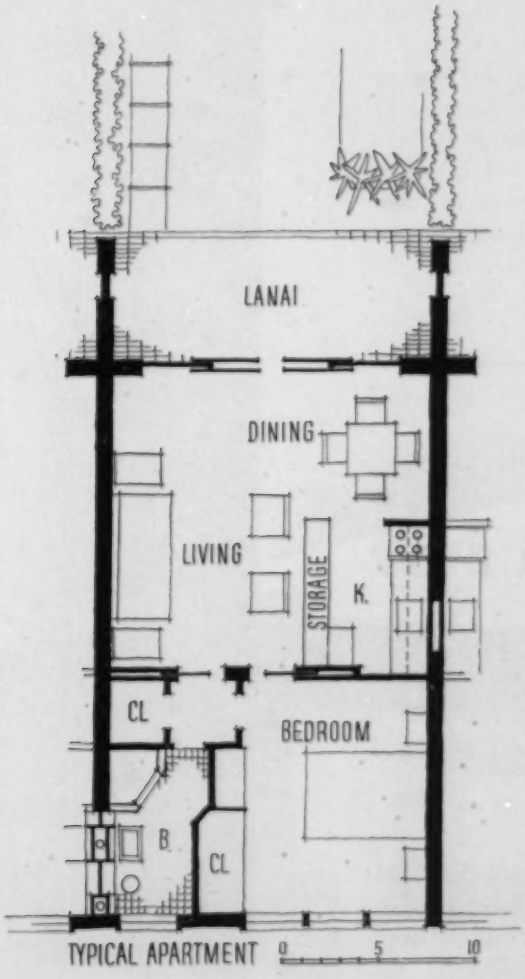
R. Wenkam Photos

IOLANI SCHOOL FACULTY HOUSING

R. E. Windisch, Architect



THE two-story corridorless building popular in the Islands for business use is equally adaptable for residential purposes, as this faculty housing project for the Iolani School for Boys proves quite conclusively. The building contains 12 apartments, three of them two-bedroom "family" units. Each has its own lanai and its own individual entrance. Each also has a kitchen, complete with stainless steel sink, electric stove and refrigerator, and ample storage space.



Foundation — Reinforced concrete on cast-in-place concrete piles

Framing — Reinforced concrete

Exterior walls — Stucco

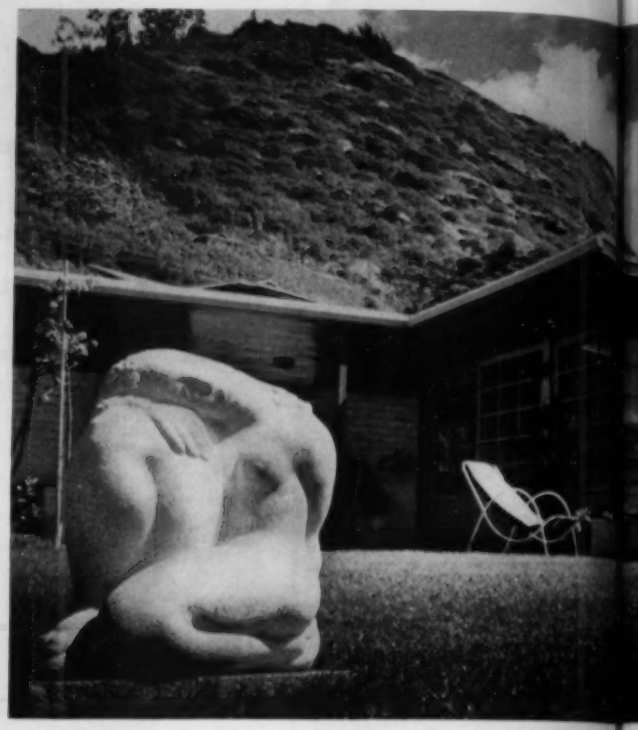
Interior walls — Plaster

Roof — Built-up asphalt and gravel

Floors — Reinforced concrete

Ceilings — Plaster on slab

RESIDENCE OF MRS. ALICE C. LENNIN



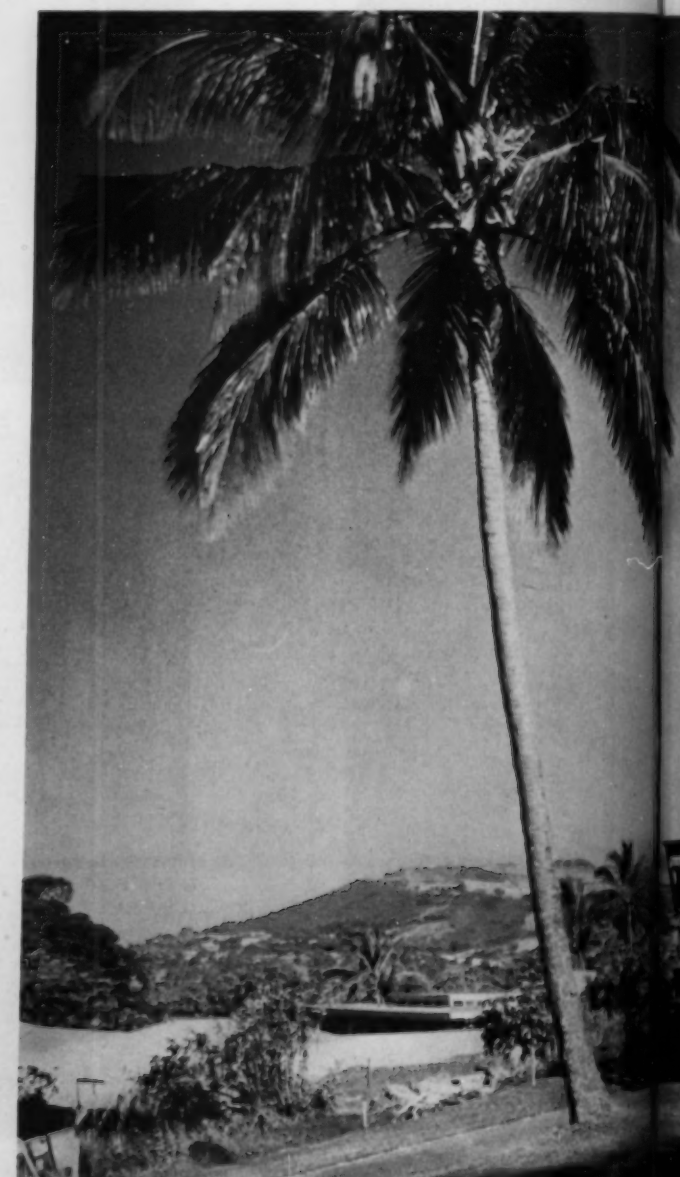
Ives & Hogan, Architects

LIKE most of the houses in the Islands, this one in Manoa Valley is simple in plan and designed to make the most of climate and view. Its steep site was used to good advantage in the placing of bedroom wing on a lower level to bring the view to every room in the house. Foundation is timber and hollow tile; framing is 2 by 4 studs; exterior walls are fir.

RESIDENCE OF MILDON A. PIETSCHMAN

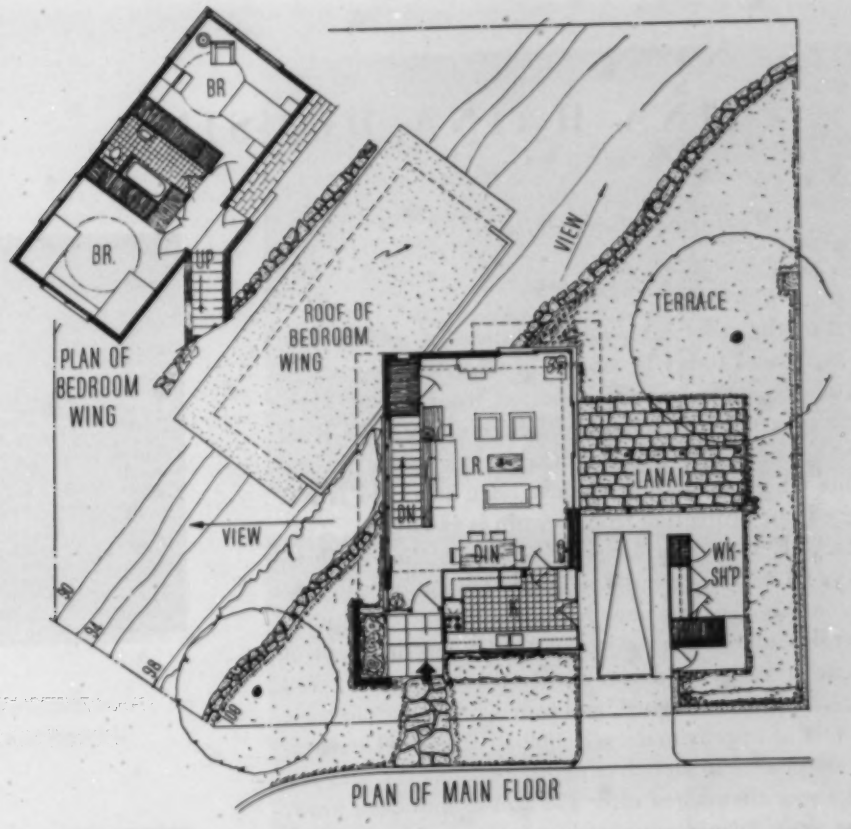
Richard N. Dennis, Architect

THE Pietschman residence, right, is one of the buildings to be presented in detail in a later issue of ARCHITECTURAL RECORD. It is of single-wall construction, on cement block foundation.



NNIN HONOLULU

R. Wenkam Photos

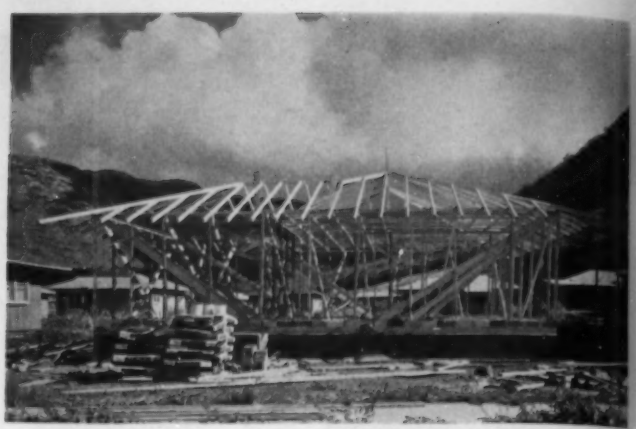


AINA HAINA HOUSING

Wailupe Valley, Oahu

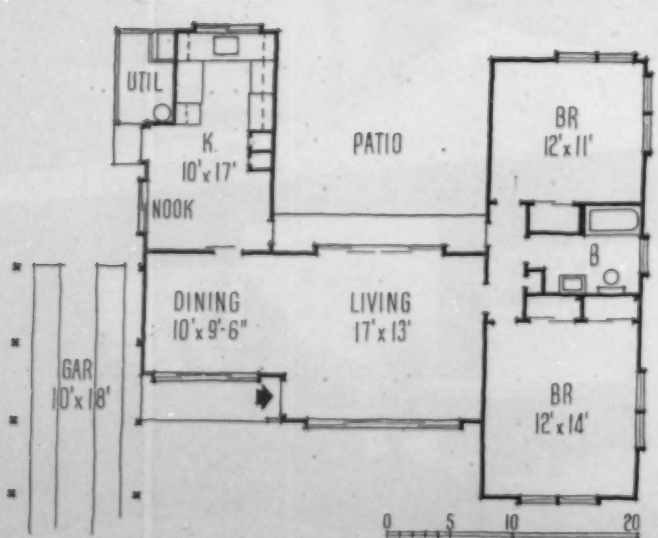
ONE of the most interesting features of architecture in Hawaii today is the use of single-wall construction, a concept originally imported from Japan. Consisting of a unique method of hanging the walls from the roof (construction photos at right), it is ideal for the Islands where insulation against heat and cold is not required but protection from vermin is essential.

At Aina Haina, a large development in Wailupe Valley, 20 minutes from downtown Honolulu, the majority of the houses now being built are single-wall. Original plans for the project called for development of the entire valley and the construction of about 700 homes, architect-designed, and somewhat higher in cost, with lots of approximately 10,000 sq ft each. Development costs were higher than expected, however, and the project was abandoned after 175 houses had been built. It has since been reactivated on a limited basis, with lower-cost homes.



First step in single-wall construction, following laying of foundation, is erection of temporary bracing for roof

Temporary bracing is removed once walls are completed, and house is ready for installation of sash



Development started under direction of American Lumber Co., Ltd., Builder; Austin and Towill, Civil Engineering and Subdivision. Various architects designed the houses. Present operation is under the auspices of the recently formed Ernie Nowell Construction Co.

R. Wenkam Photos

When roof is in place the house is ready for its walls, which are hung from it and anchored top and bottom

Among the 72 homes now under contract at Aina Haina some are of tile construction, also very popular in Hawaii. These, like the single-wall house at left, are lower in cost than the first buildings erected (page 130)

Finished house is conventional in appearance, but is ideally suited to semi-tropical conditions of the Islands

Right: Aina Haina market; R. E. Windisch, Architect. When completed, the project is expected to have 19 stores, a theater, service station, school, church

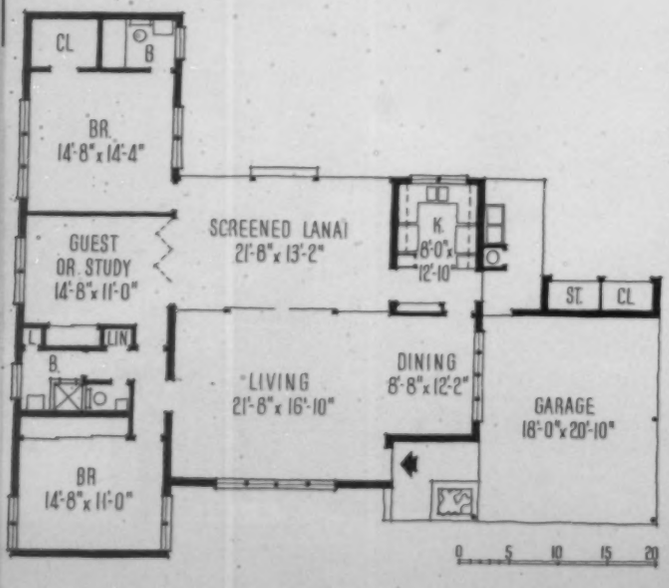
AINA HAINA

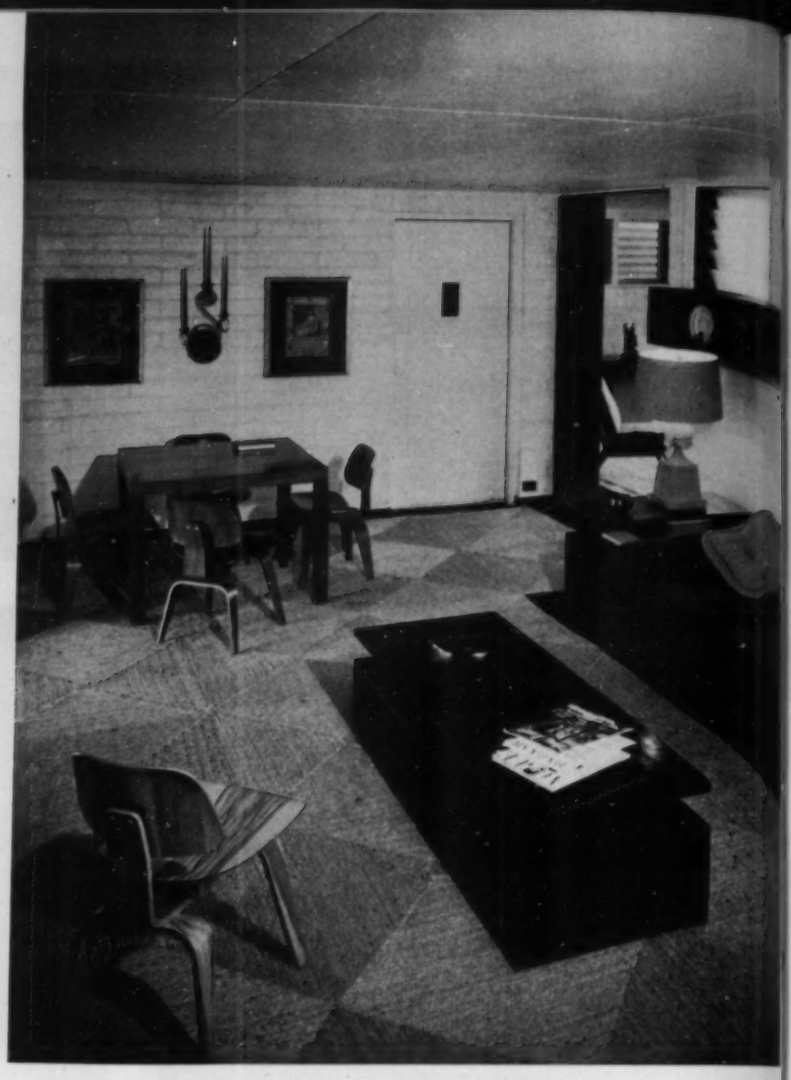
Stock-plan House

Wimberly and Cook, Architects

UNDER the original scheme for Aina Haina the owners selected stock plans, drawn by various architects, and contracted for construction on an individual basis. The project was closed down before the effect of mass production savings could be fully realized.

The house shown here was one of those built under the original plan. It has many features typical of the Islands: louvers for ventilation, sliding glass doors leading to the lanai, and sun control devices forming an integral part of the design.





R. Wenkam Photos

A HOUSE IS A HOUSE IS A HOUSE

"In literature, I would say that style is the preoccupation of those who have nothing to say. Whether that is true of architecture I do not know."[1]

"Colonial Williamsburg's small houses . . . not much different from those now being built . . . were practical, asymmetrical, full of corner cupboards and corner fireplaces, and had gadgets to help make the most of limited space."[2]

"During the past half-century, our progress in home sanitation, in heating and ventilation, in improved household equipment, has been revolutionary. In that same period, however, we have been retrogressing in space provisions to an almost equally phenomenal extent. Normal and happy and fruitful family life is possible without modern plumbing and deep-freeze equipment. It is not possible without a reasonable modicum of space."[3]

THE authors of these statements, all highly respected individuals with more than superficial acquaintance with architecture, were not talking idly. Each was seriously making his own attack on today's work. What is their justification?

If, forgetting that you're an architect and taking a somewhat detached viewpoint, you can dispassionately examine an average, good, contemporary house — as a scientist might, for instance, examine a mole's burrow to ascertain its habits and appearance — you can reach some ludicrous conclusions. Charles Agle, New York architect and member of the firm of Harrison, Ballard and Allen, did.[4]

Let's start with the American bathroom, conceded to be an index of the highest material standard of living ever achieved by man. Judging by the height of a lavatory, our dispassionate investigator could logically assume that the American adult stood 4½ ft tall; by the traditional position of the mirror, that the user's physiognomy projected at least 14 in. beyond his torso. (How could he imagine the calisthenics, the balancing, involved in plucking an eyebrow or washing the last of the shaving soap out of one's ears?) Then, turning to the toilet seat, he would find that set at a height ideally suited to the functions of an individual 7 ft tall. Again, the tub must be for a four-footer, unless — but this could never be! — the seven-footer were to wrap his knees about his ears. And, ah, yes! Since soap, water and smooth surfaces are almost lethally slippery, the four- or seven-footer must be shod with suction cups.

The laundry would disclose further contradictions. "A remarkably ingenious creature," the scientist might murmur on beholding the automatic laundry machine. "Remarkably equipped, too; or perhaps only the female has the integral lift-truck, rubber-tired wheels and motor required to carry bulky sheets, heavy towels and dirty clothes so far. Yes, such a mechanically developed physique can be the only reason for locating the washer so far from the places where most laundry originates. We know from their factories that these beings understand the rudiments

Robert C. Cleveland Photo

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[1] *I. C. Perrot, British journalist, speaking of twenty years at the press tables of the Architectural Association and the R. I. B. A., as quoted in the October 1950* Journal *of the A. I. A.*

[2] *Frederick Gutheim, author, architectural editor and critic, in the* N. Y. Herald Tribune, *March 5, 1950.*

[3] *C.-E. A. Winslow, Chairman, Committee on the Hygiene of Housing, in the foreword to the Committee's recent publication,* Planning the Home for Occupancy.

[4] *In recent articles in the* N. Y. Times, *and in an address before the N. Y. Chapter, A. I. A.*

of efficient production flow." (Efficiency! Should houses be efficient?)

Viewing the streamlined kitchen counter with its built-in sink, and considering that its *bottom*, 8 in. below counter level, is the sink's working plane, the investigator would be justified in assuming the user to be fairly short, but with abnormally long arms. This assumption would be reinforced by the position and depth of the conventional base cabinet, and contradicted by the heights of counters and upper wall cabinets.

Ludicrous as these assumptions appear, they could all be made with reason. If, as so many architects believe, their profession is responsible at base for all or nearly all the improvements in equipment evident when today's house is compared to yesterday's, does not the fault lie with architects? To take one example, one hears architects stating that originally the architect demanded for the bathroom surfaces which could easily be cleaned, which would withstand moist atmosphere. American ingenuity and productive capacity have now provided him with ceramics, plastics, metals and glass in profuse variety. There is nothing wrong with these materials, nor with the ingenuity and industry which produce them. Yet in embracing them wholeheartedly architects, including many top-flight practitioners, produce what our insurance companies tell us is a prime source of injury and death — this in a home, which by implicit definition should be a safe haven.

No, it is not the material or the equipment, generally speaking, which is so much at fault; it is the manner of use in relation to the prevailing conditions. This holds even for equipment which is job-assembled or job-built, too. Every household needs storage space for cleaning materials; but why, in any modern house, must the cleaning closet, where are kept the dirtiest household impedimenta, be located in the kitchen where the food we eat is prepared? Why cannot the laundry be placed close to bedrooms and baths, perhaps with sewing and storage facilities directly at hand, to minimize this heaviest household chore?

House design is an endless series of problems in the organization of space and equipment, among other things. If we have accepted marvels of equipment without thoroughly investigating them, without thoroughly integrating them into the whole that the house should be, we have even further cramped the small spaces into which, we are reliably told, we now unwisely cramp our domestic life. We have progressed little in understanding beyond the builders of Colonial Williamsburg's houses, which were designed by builders, not by architects.

One can carry this identical argument into other facets of house design. Take the matter of style, with which the opening quotation is concerned. The architect indolent enough to produce an unthought-out version of "Colonial" and label it a house is guilty not only because modern equipment, materials and techniques seldom do more than cramp his style; it is much more important that the routine of domestic life has changed, and his architectural solution hampers that. We do live outdoors much of the time. And with an appreciation of nature, the desire for verdure and blossom all year leads naturally to inclusion of space for growing plants within our houses. We do have automobiles, and the garage entrance of the house on the suburban fringe is fast supplanting the old-fashioned front door as an entrance. We have fewer servants, and the housewife does more — or all — of her own work. Our guests penetrate our kitchens to help mix cocktails.

George Stille Photo

Not that there isn't a place for the honest antiquarian; our true architectural past sadly needs preservation. It is the insincere copy which trades upon the snob appeal of romantically secure past glory that bothers. Also a bother, and equally snobbish when you come to think about it, is grotesque, slavish imitation of a Mondrian or a Picasso in architecture. The architect of a house need not strain to ape the cubist, for he was a cubist long before the painter appropriated his idiom. What is a room, a bookcase or a building but a series of problems in three-dimensional geometry?

— *Frank G. Lopez*

Lionel Freedman: Pictor

Lionel Freeman Pictor

Pirkle Jones Photo

Facing page, eyebrow to keep high sun off a glass wall which both admits a fine view and provides a hazard for junior on his tricycle; far left, two-compartment bath; center, kitchen and dining space separated only by a cabinet (all three by The Architects Collaborative). Right, modern version of the hob seat plus masonry with scarcely visible support (V. K. Thompson, Designer)

HOUSE IN ANDOVER, MASSACHUSETTS

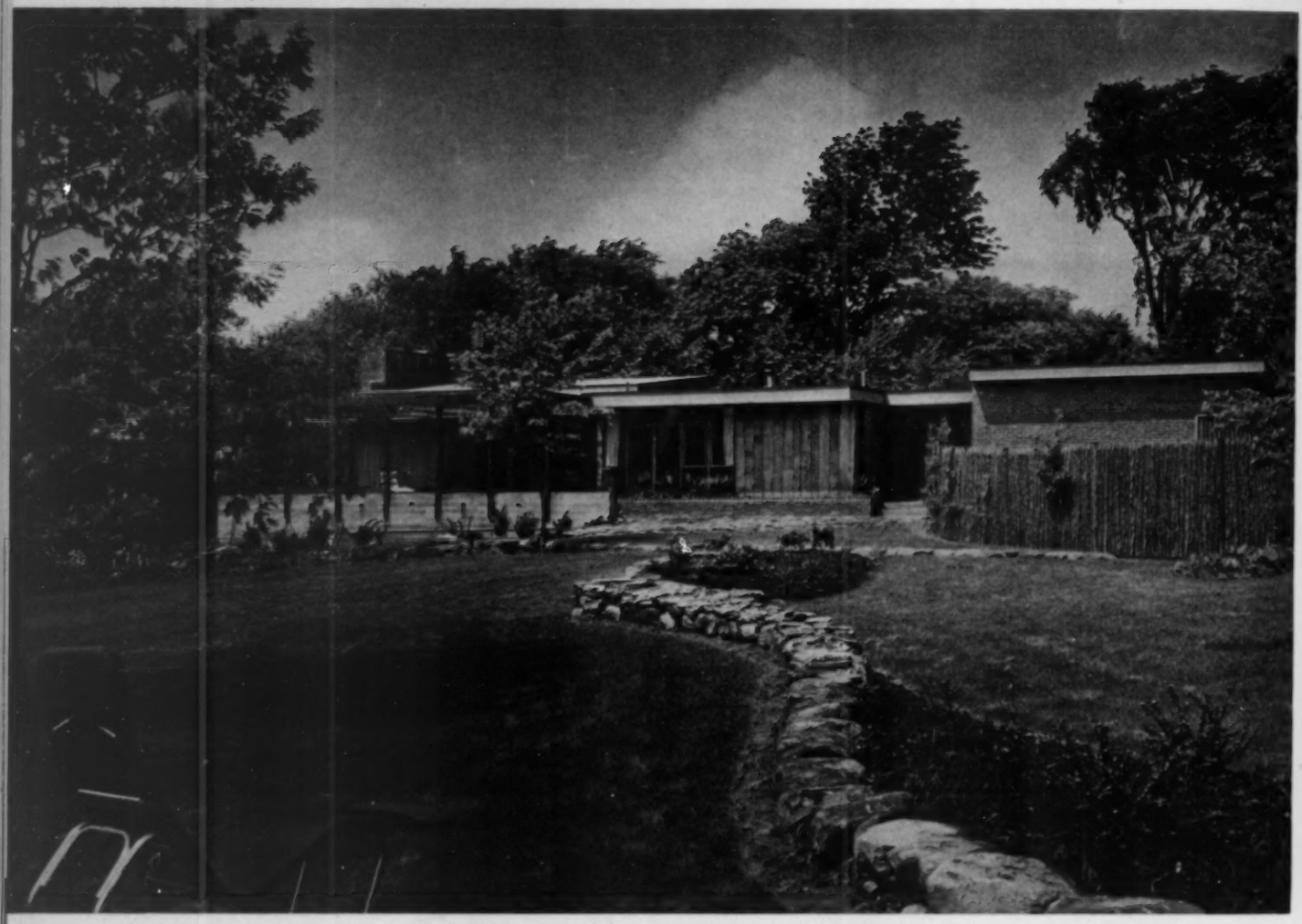
Bernard Kessler, Architect

Joseph Molitor Photo

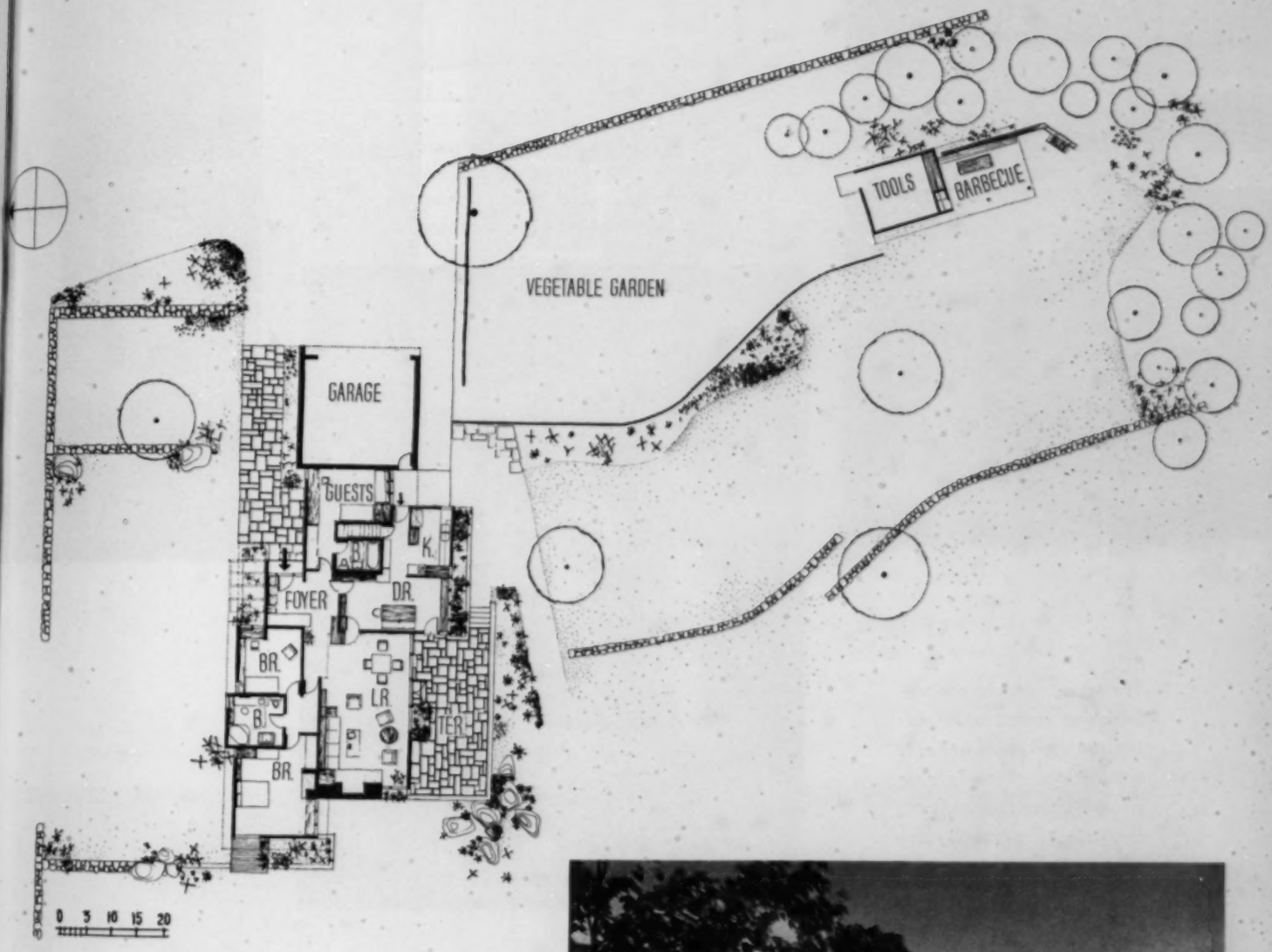
HOUSE IN ANDOVER, MASS.

THE owners, a couple in middle years, live alone and entertain informally and in small groups composed principally of their children. They insisted on having their bedrooms off the ground; hence the placement of the house on the sloping

Joseph Molitor Photos

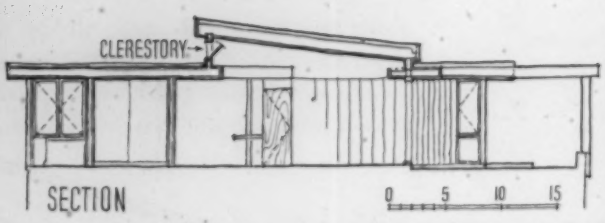


site, with bedrooms five to eight feet above grade. The isolated bedroom with its own interior bath (artificially ventilated) is used for a servant or for guest quarters. The kitchen-dining area, quite unusual and yet extremely sensible for this informal household, is designed to permit husband and wife to share in preparing and serving family meals; both are good cooks. At the same time, a partial wall screens as much as possible of the work area, with its stacked pots, pans, dishes, etc. The ease with which after-meal mess can be closed off from the remainder of the house, and the simplicity with which such a compact space can be cleaned up, should be apparent. The same logic has been applied to the entire house, together with a not inconsiderable talent for assembling the required elements pleasantly. In harmony with its natural setting and thoroughly contemporary, this is a house in which it should be fun, not work, to live.

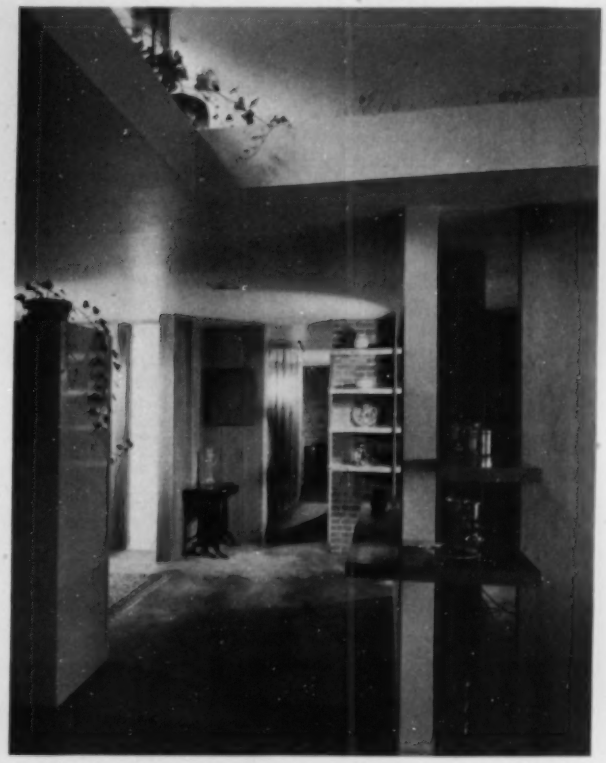


Beneath bedroom-living room end is, besides service space (heater, etc.), a large playroom where grandchildren can romp in poor weather while parents and grandparents visit on the first floor. Terrace, right, is shaded by a grape arbor which in winter, when leaves are fallen, admits plenty of sun to the living room. The deceptively simple landscaping both ties the house to its setting and opens to embrace a view, from the terrace, across a wooded valley

HOUSE IN ANDOVER, MASS.



Clerestory above interior corner of living room admits light, ventilates, forms a plant shelf which, continued around two sides of the room, becomes an indirect lighting trough. Ceiling is higher in living room than in other rooms



The same materials, common brick and vertical cedar siding, are used inside and out, with addition of some plaster on interior walls and ceilings. Everything is thoroughly up-to-date: heating is radiant panel with copper tubing in ceilings; most lighting fixtures are indirect or recessed; there is much built-in furniture; the flat portions of the roof are designed to be flooded for roof-cooling in hot summer weather. As in most outlying houses, entrance through the garage is at least as important as the formal "front" door (photo above), which is almost hidden. It is noteworthy that traditional furnishings fit into the house well

Despite the numerous refinements in this house, it is in spirit far from the modern showcase which so intrigues many architects. Rather, appropriate contemporary ideas and equipment have been adapted and blended in a way which neither denies that the oc-

Joseph Molitor Photos

cupants have roots, nor over-emphasizes them. The house, though it is no cottage, has domestic, human scale brought into sharp focus at the indoor barbecue (above) where the master can broil meat while his wife, with cooking muss out of sight around a corner, prepares the rest of the meal. That the house has also a friendly dignity is a compliment to both the owners and the architect

HOUSE FOR DR. MARY G. HAMILTON, SA

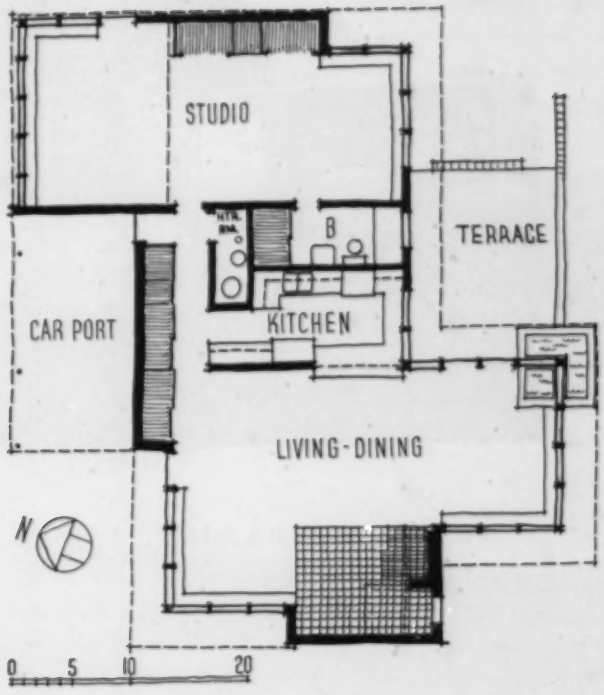
Victor King Thompson

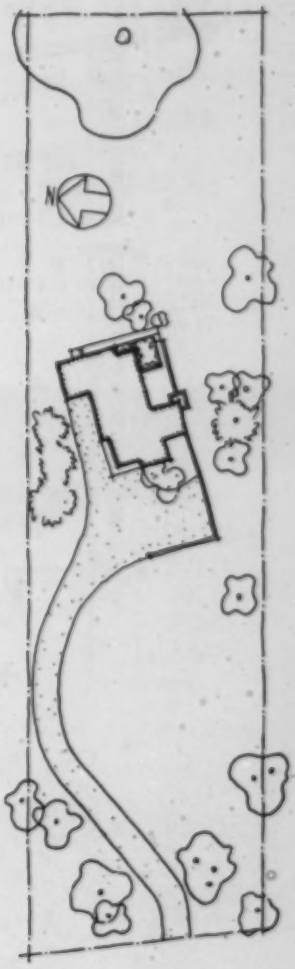
Designer

THE owner, a college professor and single, had some definite requirements. She wished to house a small collection of Oriental painting and ceramics and a large library, to do a limited amount of craft work at home, and to retain the original character of the site, which is dotted with large toyon bushes and a few small oaks in clumps. The house was planned to fit between the clumps — none were destroyed — and grading was held to the absolute minimum. Inside, the house was freely organized; all the convenience of the usual room divisions was maintained, but there is not the conventional segregation of spaces. The designer exploited the program fully, adopting the butterfly roof which, less appropriately used, becomes an unassimilated cliche; here its justification is the view, which a flat or gabled roof would have cut off. The house has radiant heating in the floor slab, and has masonry wall areas of buff-colored concrete block, unpainted, between which are modular wood-framed walls.

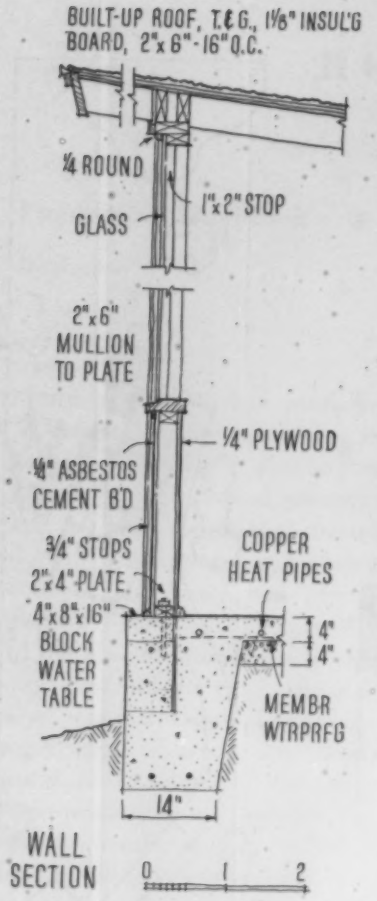
Pirkle Jones Photos

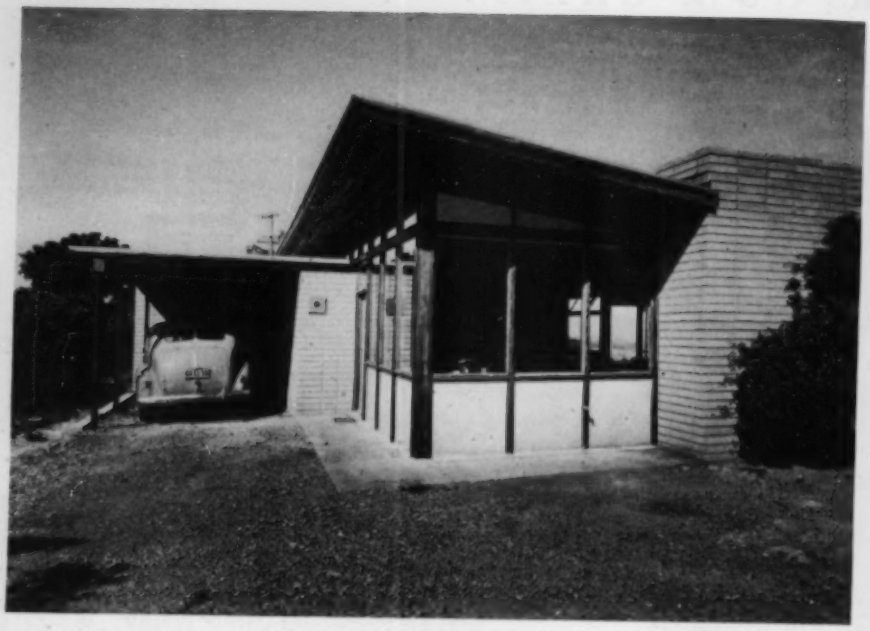
ON, SARATOGA, CALIF.





Site, more than two acres on a knoll in the Saratoga foothills, offered excellent views in nearly all directions; hence the glazed walls. Shelves beneath nearly all windows provide for the owner's 2000 books. Terrace pool to attract birds; openings in footings permit water and fish to circulate between indoor and outdoor pools. The solid-walled area surrounding the hearth provides a retreat from the overpowering view





HOUSE IN SARATOGA, CALIF.

Construction module is 3 ft 4 in. in both directions, to fit concrete block and provide 2 by 6 in. redwood mullions in frame walls at intervals close enough to avoid heavy lintels. Eating bar (below) separates kitchen from living space, can be closed off completely by rolling bamboo shade

Pirkle Jones Photos

ARCHITECT'S OWN HOUSE, CINCINNATI, OHIO

Carl A. Strauss, Architect — *John F. Kirkpatrick, Landscape Designer*

FULL utilization of the fairly steep site overlooking the Ohio River and city beyond, and ease of maintenance and housekeeping for a family consisting of the architect, his wife and two sons, were the design criteria here. Access to the site is from the upper level, so carport, entry walk and principal entrance are on the upper level along with bedrooms; living room, etc., are below.

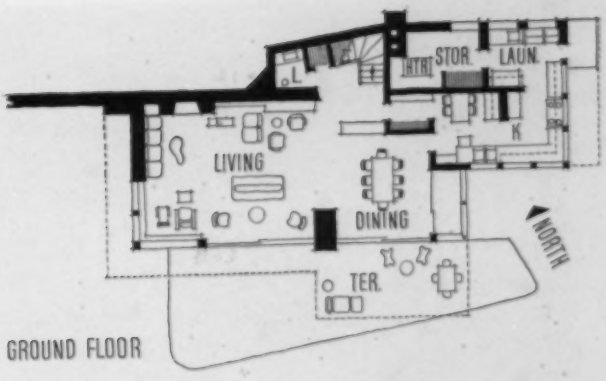
Hedrich-Blessing Photo

HOUSE IN CINCINNATI, OHIO

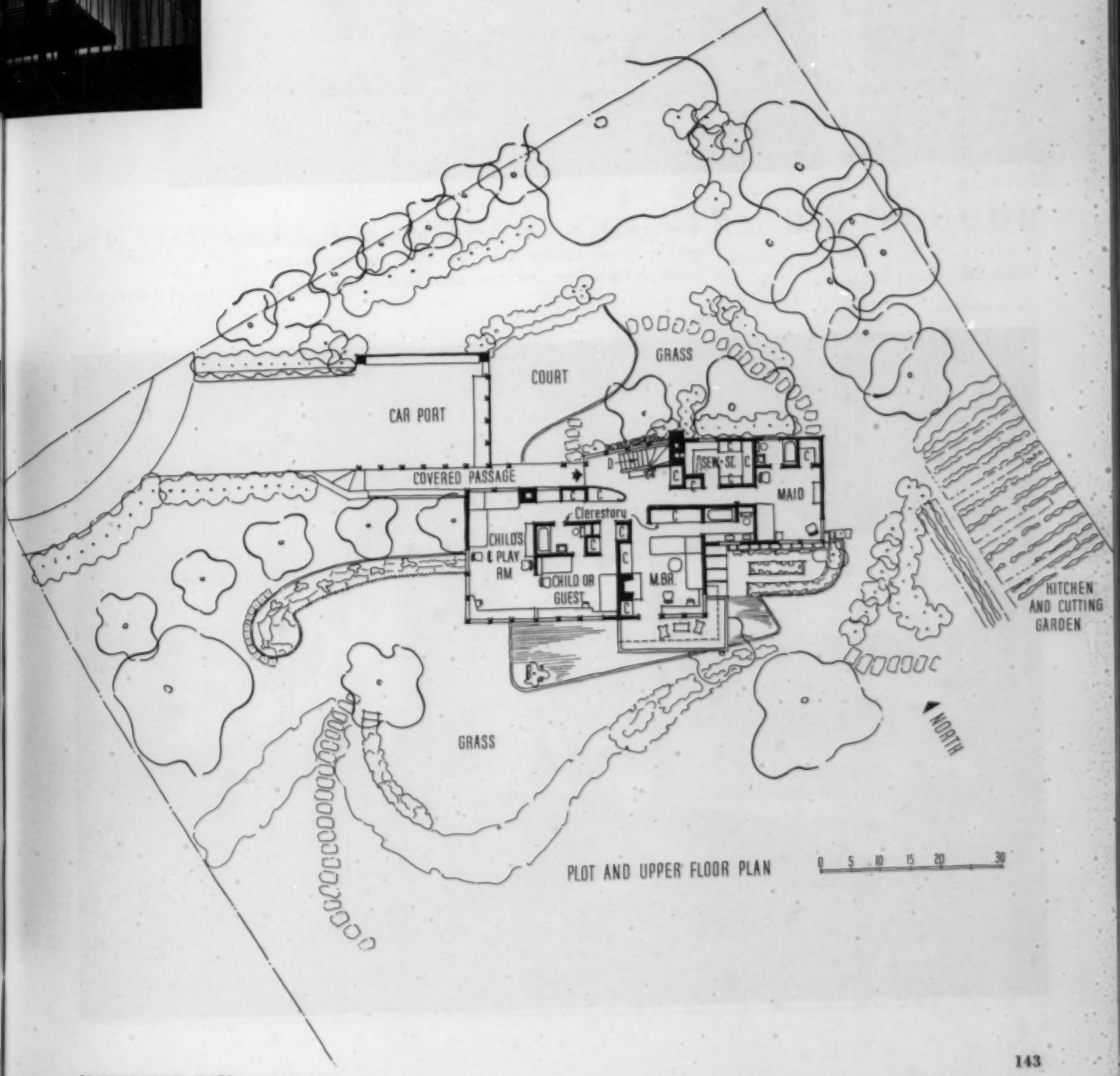
Left, living-dining room, at ground level, has paving-brick floor extended outdoors. Though sliding walls are not screened, direction of prevailing breeze and an infrequent spraying with insecticide almost eliminate insects; the family's pleasure in easy outdoor-indoor access outweighs the nuisance of the occasional stray bug or dog. Above, second-floor entry

Hedrich-Blessing Photos

Like every detail of construction and finish of the house, planting is laid out for ease of upkeep



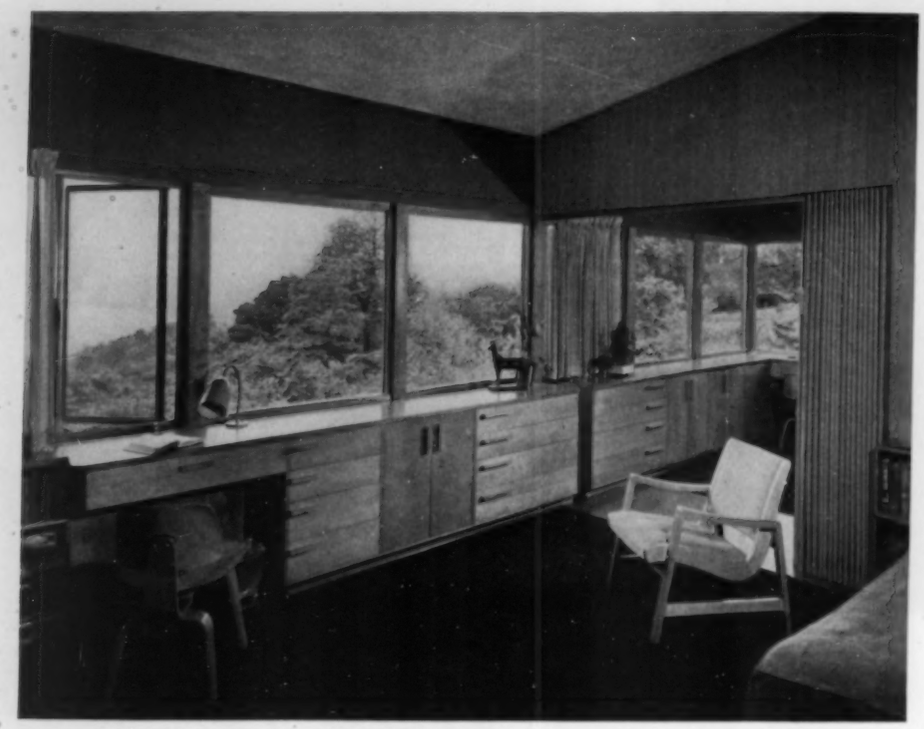
GROUND FLOOR



PLOT AND UPPER FLOOR PLAN

HOUSE IN CINCINNATI, OHIO

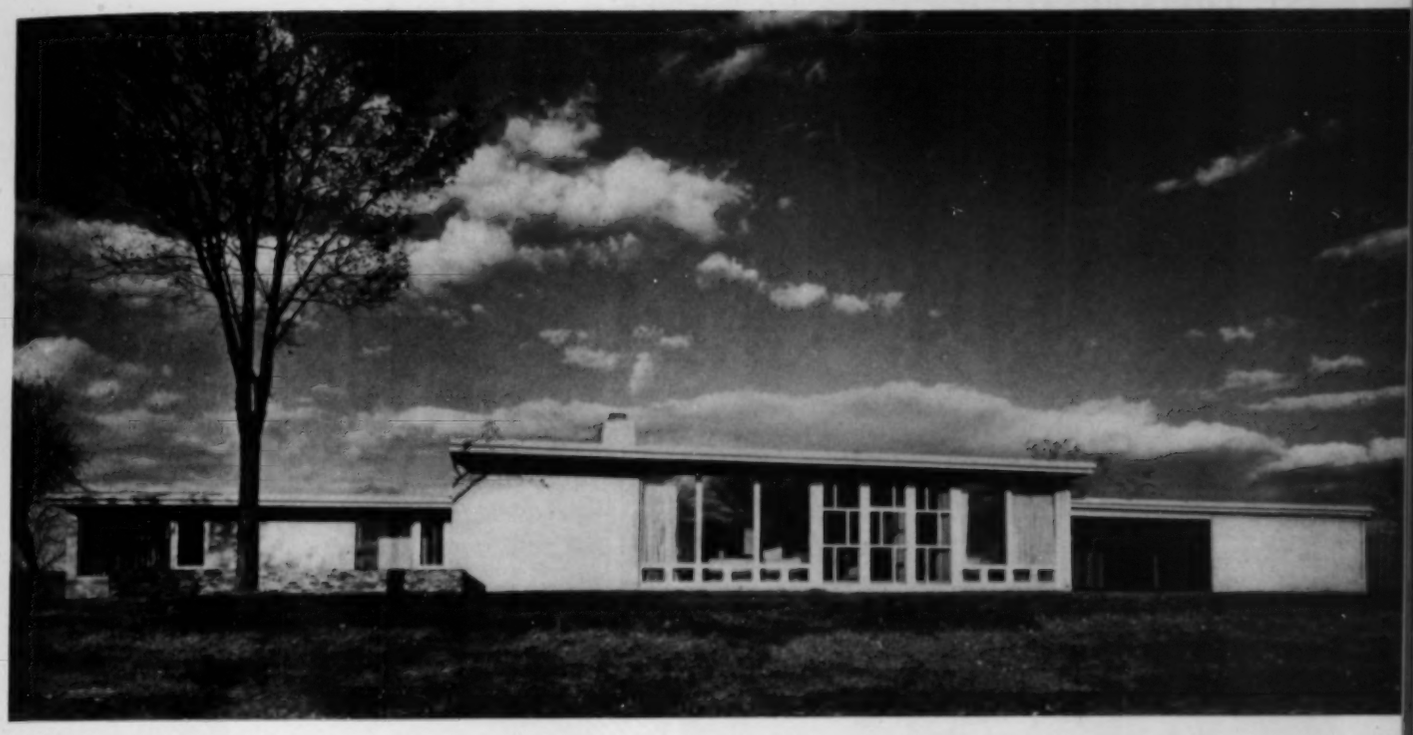
Hedrich-Blessing Photo



Boys have two bedrooms which can be separated by a folding wall or thrown together. On upper floor, walls are striated plywood; on lower floor some stone, obtained from excavation, is used

George Stille Photo

Piaget Studio photo



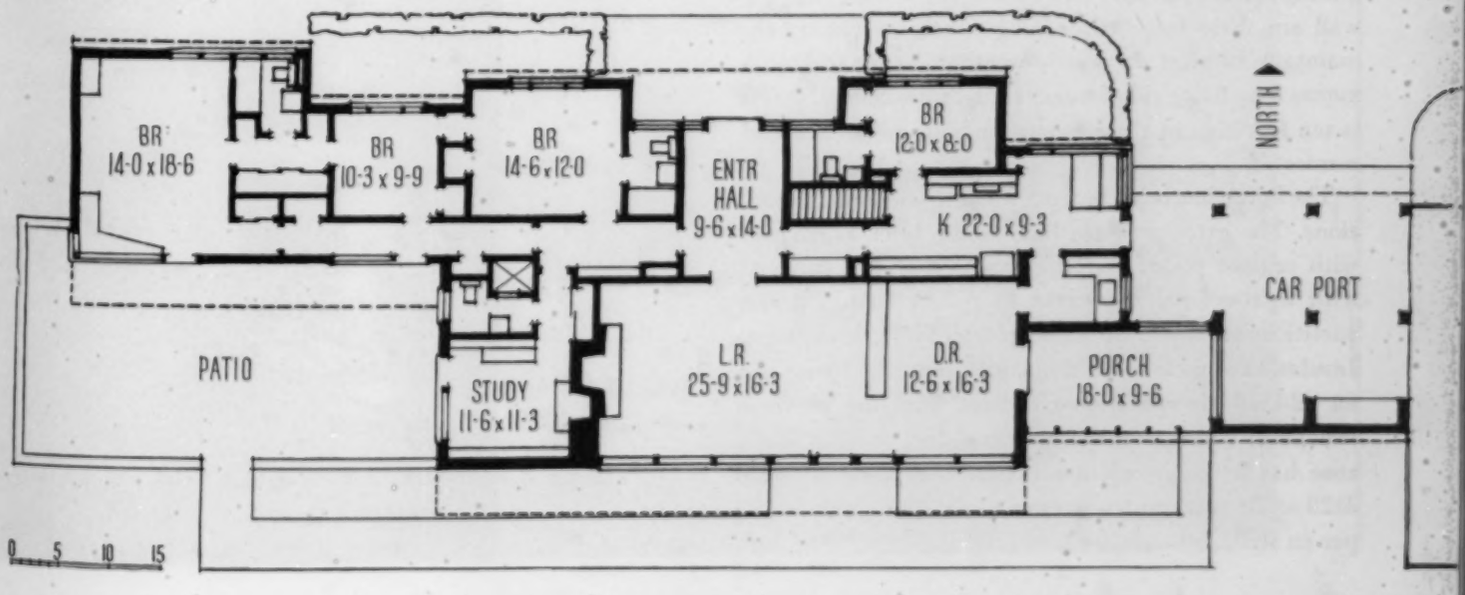
HEADMASTER'S HOUSE, COUNTRY DAY SCHOOL

Frederick Dunn, Architect — *St. Louis, Missouri*

John D. Falvey, Mechanical Engineer

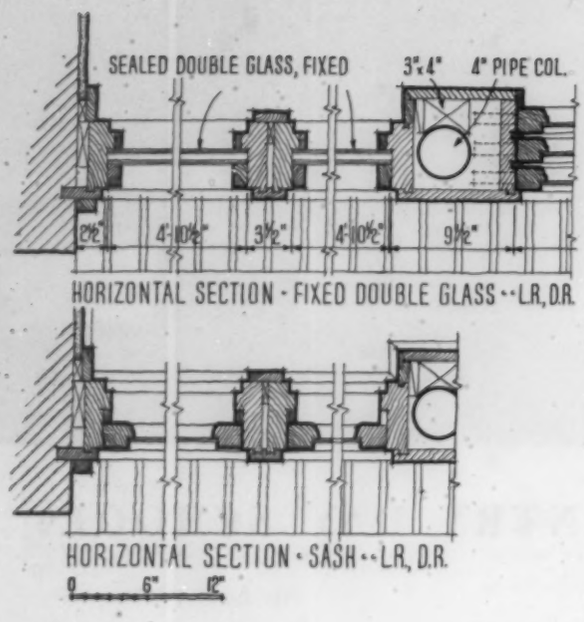
William C. E. Becker, Structural Engineer

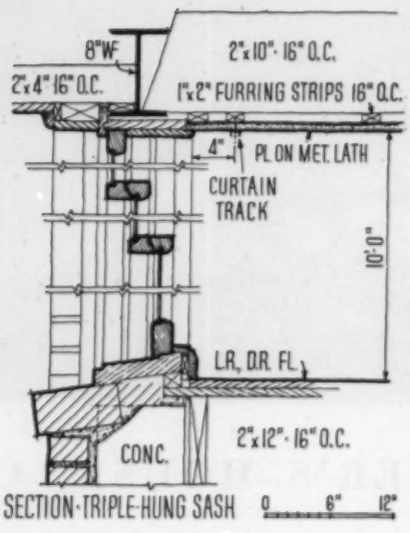
ITS plan worked out within the foundation limits of an old and very fancy Colonial house which burned down, this house sits on a knoll on the grounds of the St. Louis Country Day School. Using the old foundations and basement reduced construction costs but complicated planning; hence the north-facing bedrooms and certain other features.



ST. LOUIS HOUSE

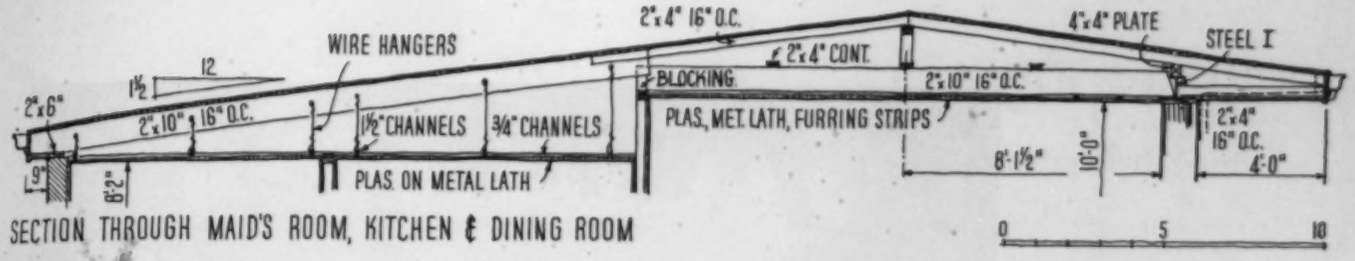
Center photo: large living room, from which the dining room is separated only by tall cabinets of curly birch plywood. Left, details of triple-hung sash and double glazing; right, details showing roof line following ceiling levels, which are lower in north rooms. At bottom: fireplace end of living room, and study





Of necessity, Headmaster and Mrs. Robert N. Cunningham's house is quite formal. In living and dining rooms the south wall is entirely glass; beneath the fixed glazing are hopper sash for ventilation, and set into the wall are three large triple-hung windows. These help maintain comfort in warm weather by providing a means for getting rid of warm air near the ceiling, which is ten feet high in these rooms for both proportion and comfort.

The house has brick bearing walls on concrete foundations. The exterior white lime facing brick is covered with cement paint, and the roof is built-up, surfaced with light-colored aggregate to reflect heat. Interior partitions are wood, with hard plaster finish throughout. Insulation is rock wool, 4 in. thick, and the house has an oil-fired air conditioner, rebuilt from the previous residence, which supplies a 4-zone duct system. Each zone has its independent controls. The house contains 3120 sq ft; total cost was approximately $42,000, or $1 per cu ft.

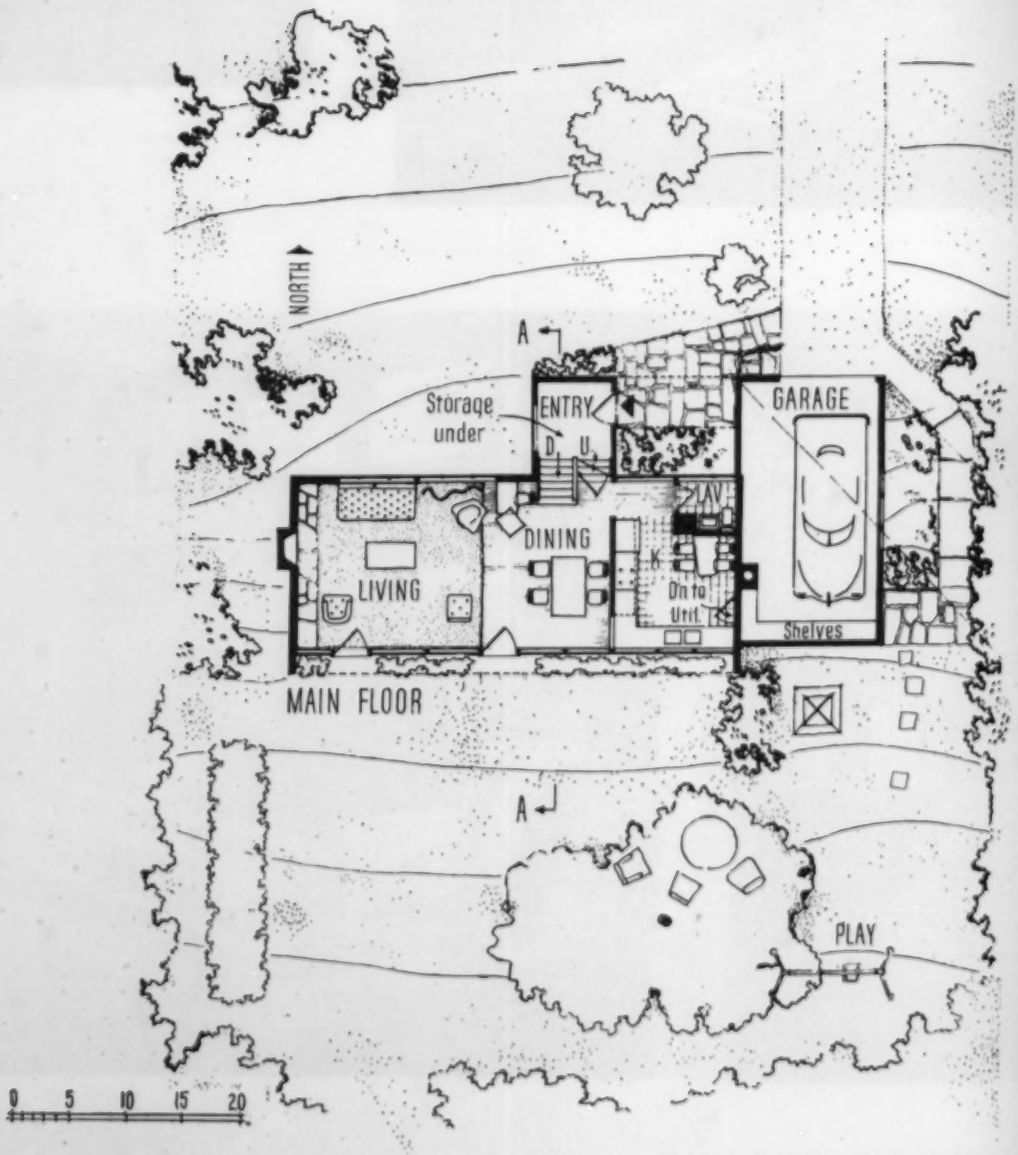


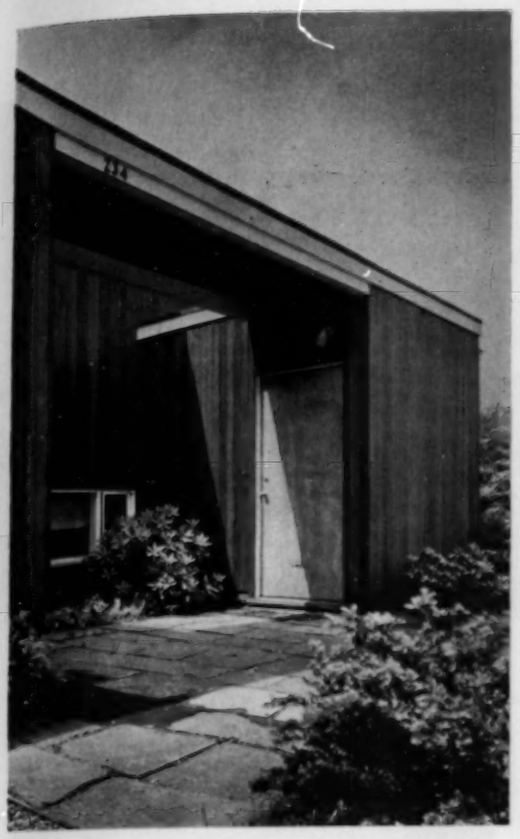
SECTION THROUGH MAID'S ROOM, KITCHEN & DINING ROOM

Piaget Studio photos

Richard Garrison photos

On a sloping site, one readily apparent economy is what we used to call "split-level" planning. The entry, halfway between main and second floors, is here kept quite open. In combination with the openness of the plan, and continuously glazed walls on the opposite—south—side, this provides perhaps the most striking first impression. Mrs. Grossi finds it a satisfying and permanent one, particularly in contrast to the confinement of the apartment in which the family previously lived. Though a more formal family might be disturbed by the fact that an entering visitor has an excellent view of the dinner table, this does not bother the Grossis



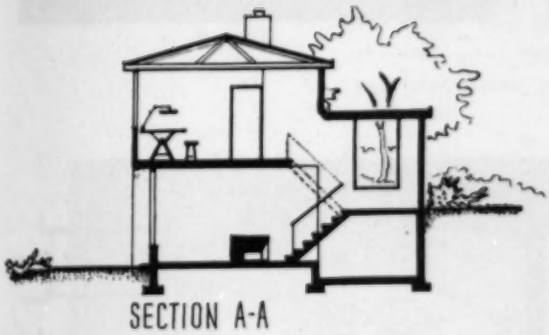


HOUSE IN A NEW YORK SUBURB

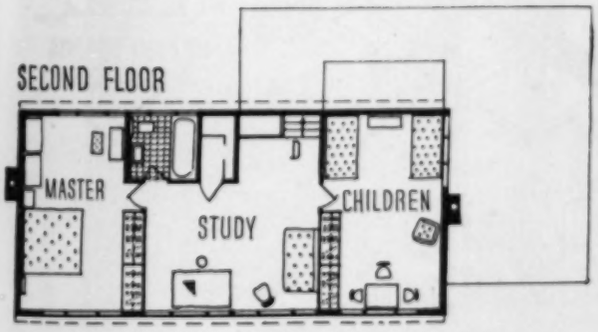
For Mr. and Mrs. Olindo Grossi

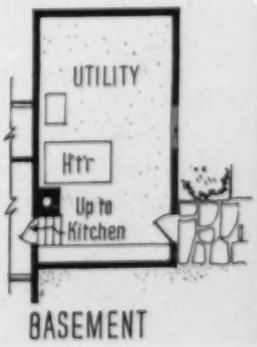
Olindo Grossi, Architect

WHEN an architect designs his own house, he's somewhat on the spot; when he is Head of the Department of Architecture (as Mr. Grossi is at Pratt Institute in Brooklyn), the spot becomes most definite. It behooves him to make judicious use of new ideas, techniques and equipment; and since his budget is just as limited as any of his clients' — how many architects or teachers are wealthy? — he must economize wherever possible. In his house his family must be able to live a normal life, and yet it must be available for demonstration. How well has this house succeeded?



SECTION A-A





BASEMENT

Richard Garrison photos

Openness and flexibility characterize this house; there is not even a pretense of a partition between living and dining spaces. A radiant heating system, designed in accordance with average practice and with copper tubing in the plaster ceilings, also contributes to flexibility. Research showed that the two-zoned system functioned well. Served by an oil-fired boiler, each zone has its own indoor thermostat. Cost precluded installation of clock thermostats and outdoor controls; it was found, consequently, that manual operation of thermostats was necessary or else, in winter, the house became too warm in mid-morning, too cool in early evening. Two criticisms: Supplies and return to upstairs zone pass through the exterior three feet of the kitchen ceiling, and when heat is needed downstairs, this ceiling is cold unless upstairs zone is also heating; and the living room coil length, 500 linear feet, made for unequal flow and a large temperature drop in this circuit's water. Nevertheless, the system was found very economical — one year's fuel cost for heat and hot water was $186 — and quite appropriate for a basementless house with so much glass. Upstairs temperatures were consistently two to three degrees higher than downstairs, probably due to convection; average temperature differential, floor to ceiling, was four degrees; the living room's glass wall apparently induced mild air currents which were found very agreeable — and which reversed at night! — and as soon as the winter sun penetrated the interior the heating system did not need to function. From 10 to 4 the oil burner ran only for domestic hot water.

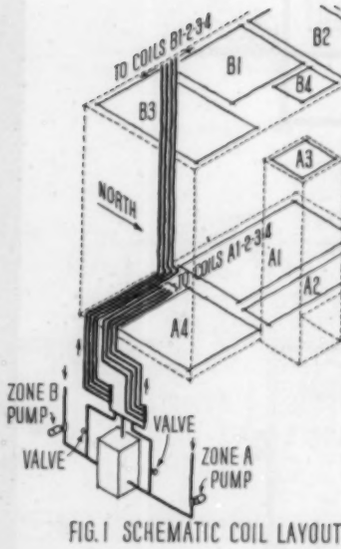


FIG. 1 SCHEMATIC COIL LAYOUT

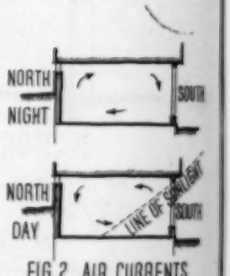
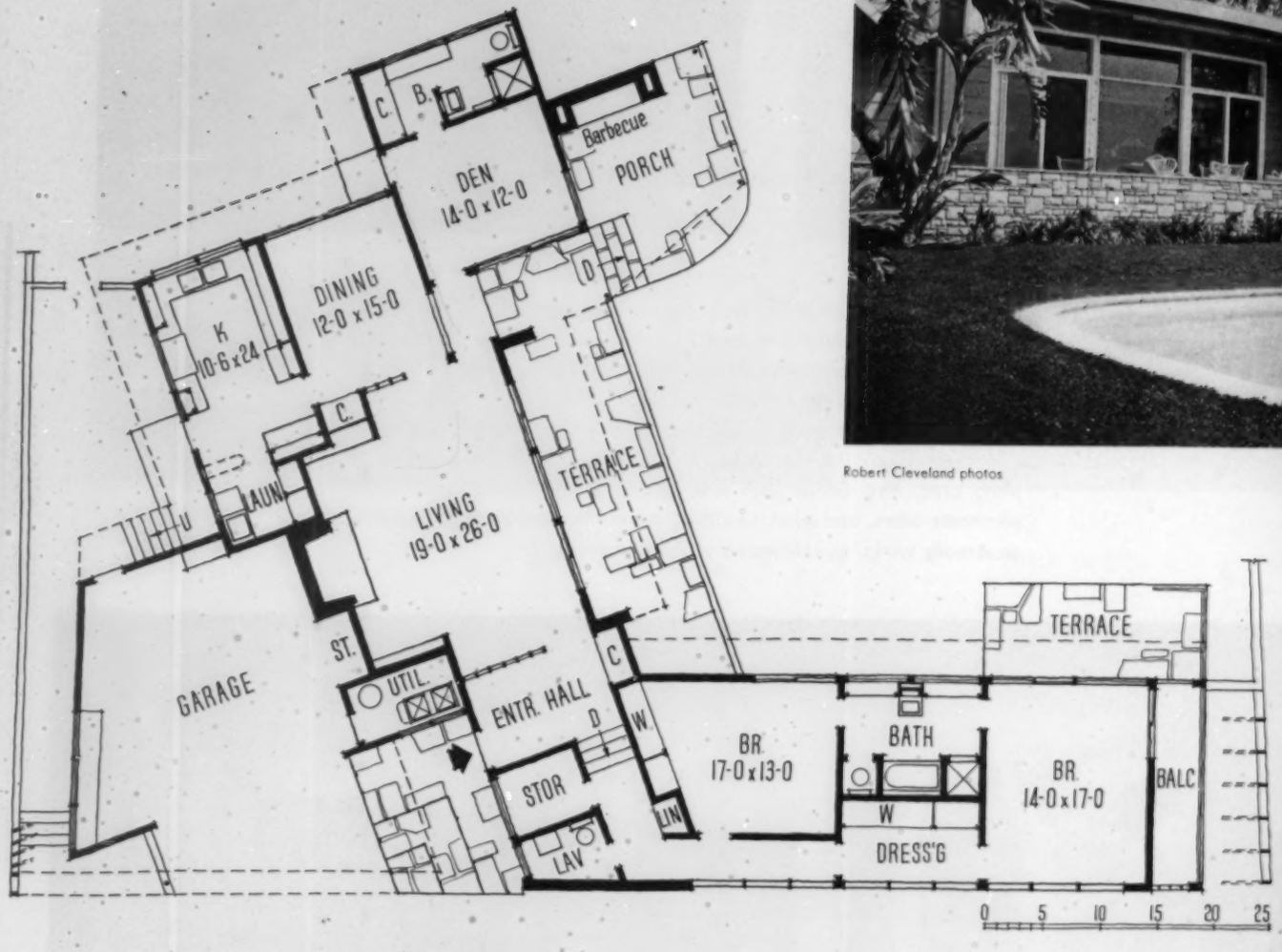


FIG. 2 AIR CURRENTS IN LIVING ROOM

Careful study of the radiant heating system was made by six students in Pratt Institute's Mechanical Equipment courses: Giles Aureli, Howard Bonnington, Sven Gelin, Joseph Hnatov, William Johnke, and John Manley. Their findings are quoted at left

There are few interior doors; wall, floor and ceiling surfaces are natural and simple, and interest is obtained by the unobtrusive use of pleasantly light colors which are given substance by the contrasting solidity of natural masonry. Curiously, the family's three small children do not find it very satisfying to scribble on such natural surfaces, which simplifies one aspect of housekeeping. The kitchen has no doors, even on the passway to the living area. Mrs. Grossi finds that cooking on an electric range almost eliminates odors, and when something burns, the ventilating fan, installed so it really works, quickly expels smoke and smells

Robert Cleveland photos



The California climate practically dictates design for outdoor living, the architect tells us, and consequently the house turns its back on the street and its neighbors, facing toward an outdoor living area which it surrounds on three sides. Beyond, across the pool seen above, is an excellent view extending to the ocean

HOUSE IN BEVERLY HILLS, CALIF.

Residence of Mr. and Mrs. Axel Zacho

Paul Laszlo, Architect

THE owner's family consists of husband and wife and a son of high-school age. They do not employ a resident maid and do not do their own laundry; so there is no maid's room and the laundry is small. Husband and wife have separate bedrooms. The son's room can be converted into a den or guest room. Since the family does not entertain elaborately the dining room was kept a nominal size. Mr. Zacho, an importer, required space for storing and displaying objets d'art; and space was provided in the garage for the son's hobbies.

The lot is large, but part of it is very steep and even the restricted usable building area, far from level, needed retaining walls at either side. This necessitated very economical planning. Fortunately the fine view of Los Angeles, beach towns, and ocean lay directly south. In this direction the house opens, away from the street, with floor-to-ceiling sliding doors. Deep overhangs here keep out the high, hot sun, but admit it early and late.

Construction is reasonably conventional, with 2 by 4 in. studs, fieldstone, redwood, and cement plaster on the exterior. Interiors are finished with plaster and striated plywood. Floors are oak, carpeted, with cork tile in Mr. Zacho's and his son's rooms.

Above, left, boy's room or den; floor here is cork tile. Right, Mrs. Zacho's bedroom has mirror wall with built-in dressing counter. Below, entry hall, with living room beyond

Robert Cleveland photos

TEST TILE FOOTINGS FOR EXPANSIVE SOILS

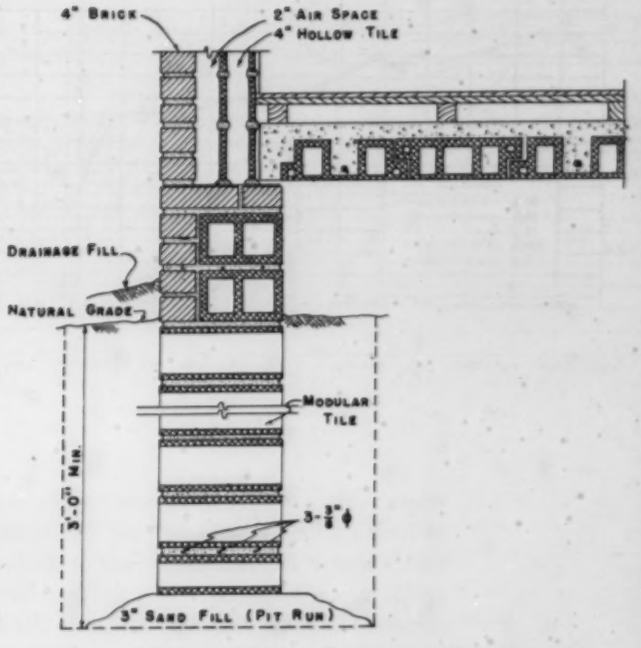
1. Expanding clay soil caused the enormous cracks in this wall

2. Crevices like this result from drying out of clay; enormous expansion follows when it rains

By Raymond F. Dawson,
The University of Texas*

THROUGHOUT Texas and other parts of the Southwest, house foundations frequently run into trouble. Certain clays in these areas shrink and then swell to such an extent with change of season — long periods of drought are followed by those of rain — that foundations of common construction, and of course the houses built on them, may easily be

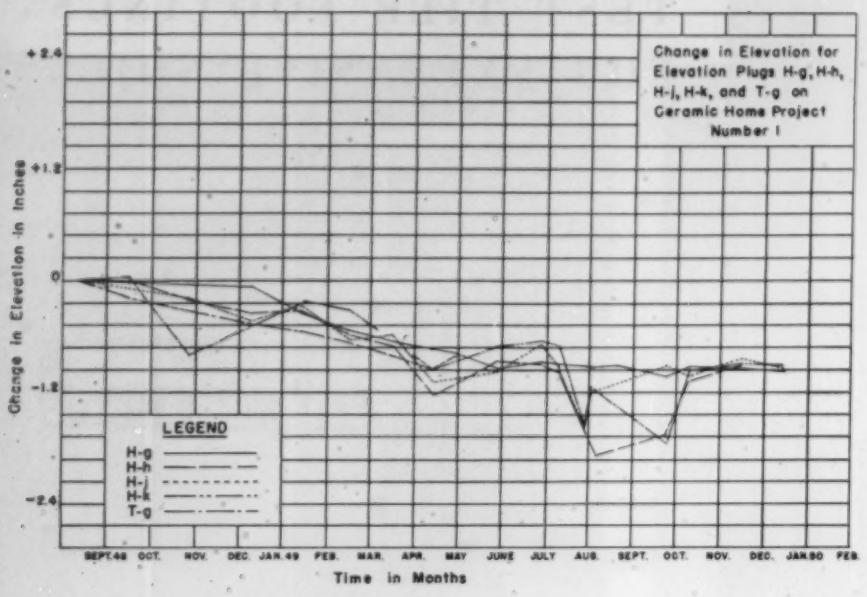
* *Professor of Civil Engineering and Associate Director of the Bureau of Engineering Research*



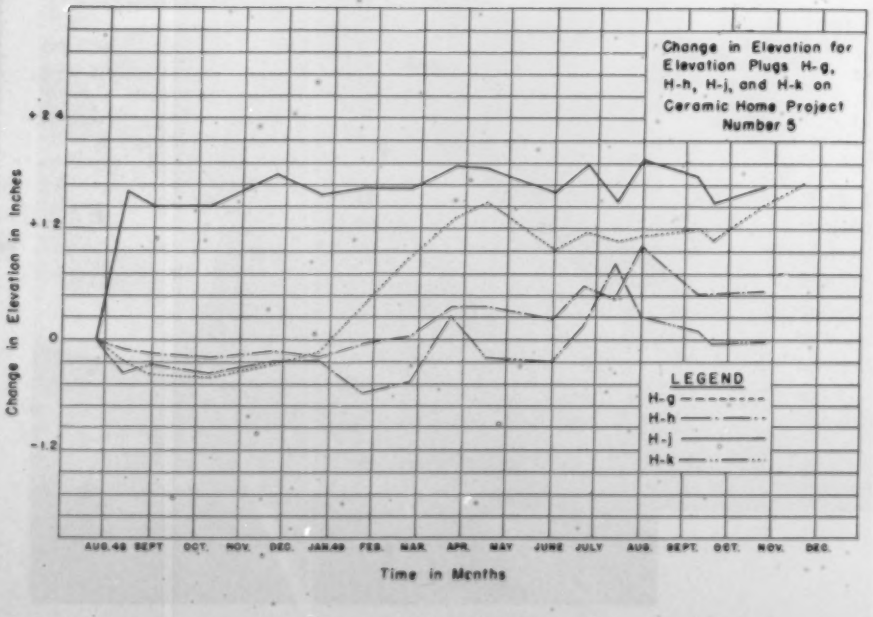
Floor & Wall - House No. 1

3. Open clay tile may be a solution for foundation in these soils

Photos Courtesy Acme Ceramic Home Program



Above: shows change in elevation (settlement) of various points around the open tile foundation of the all ceramic house, most of which is probably due to drying. The large amount of settlement and the differential movement did not cause any visible cracks. Below: shows the movement of a similar series of points on the frame house founded on spot footings. These being nearer the surface reflect considerable swelling in the soil (note the top curve) and demonstrate the unsuitability of spot footings



wrecked by the tremendous swelling pressures developed. Shrinkages of soil from 35 to 240 per cent in volume* and swelling pressures in excess of 30 tons per sq ft have been measured. When the forces of expanding clay move a foundation far enough, masonry walls and plaster crack, doors can't be closed, floors become irregular and other similar troubles appear.

The problem of constructing an economical foundation that will be stable under all climatic conditions on such soils is now being studied by the University of Texas as part of the research of the Ceramic Homes Project.†

The foundation being investigated as a possible solution to this trouble consists of cellular tile, the idea being that if the expanding soil could push into the tile openings, the high pressures would not develop and the foundation would stay in place.

Five ceramic houses and a frame house were built in Austin, Texas to study foundations, and in addition to investigate heat flow through walls and roofs, natural cooling and space heating.

A site was selected on a clay typical of Texas (called "Eagle Ford Shale") which has a volume change ranging from 63 to 146 per cent. The small photo on page 155 shows the surface cracking of the soil that developed during the summer months.

There are numerous areas where similar soils occur. Destructive movements of soil have been observed in Oklahoma, Kansas, western Canada and also in South Africa, Australia and Burma. Any highly colloidal clay combined with the right climate will behave like the Texas soil described.

The objects of the foundation research are to determine the pressures developed and the amount of movement of the houses with changes in soil moisture. Naturally we expect to determine whether or not the open tile foundation is satisfactory in the expansive clays, but in addition we want to find the amount of movement and pressure that must be considered in foundation design.

Test results discussed here are from a ceramic building (House No. 1) with an open tile foundation carried 6 ft below the natural soil, and a frame structure (House No. 5) on spot footings 3 ft below the soil. The drawing and lower photo on page 155 illustrate the details of the open tile foundation.

** When calculated as percentages of the dry volume.*

† Sponsored by the Acme Brick Co. and The Coates Co., with research under the supervision of the Bureau of Engineering Research, The University of Texas.

The depth of tile foundations in the ceramic houses range from a minimum of 3 ft to over 8 ft in order to see whether or not the depth has any influence on movement of the structures. In no case were they carried below the line of seasonal moisture change.

Expansion of the "swelling" clays produces enormous pressures in both vertical and horizontal directions, although the ratio of vertical to horizontal pressure cannot be predicted at this time. However, it is known that if the soil is permitted to expand, the pressures developed are greatly reduced.

Vertical pressures under the foundation walls of the ceramic house were found to be from two to four times the horizontal pressures. Two possible causes for this are: (1) the walls were constructed on a 3 in. sand fill resting directly on natural soil, so there is no loose back-fill to be densified; (2) the bottom of the wall has no openings to relieve the pressure. We are now considering a wall with openings to permit vertical as well as lateral expansion of the soil.

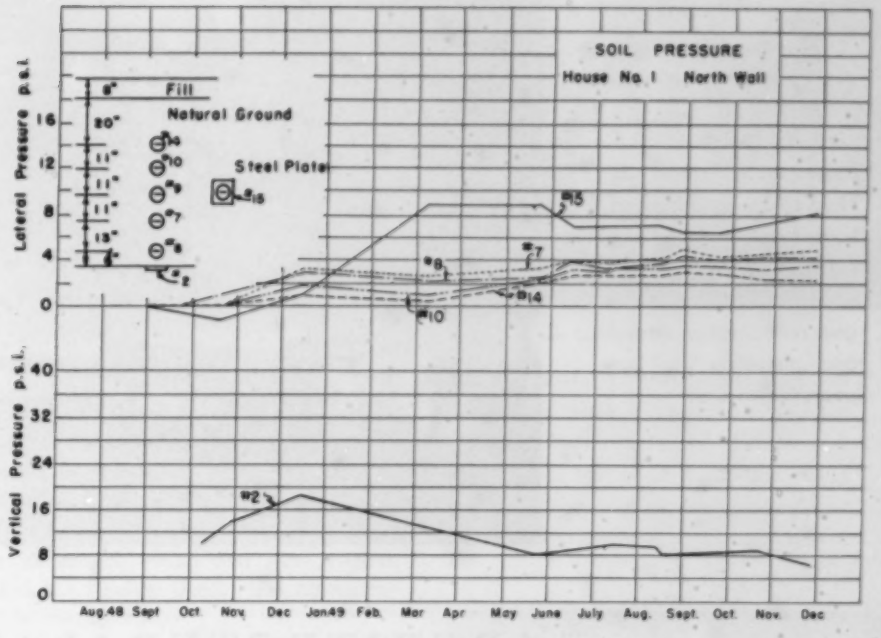
Pressure gauges measured horizontal and vertical swelling pressures of the soil. One gauge was mounted in the center of a 3 ft sq steel plate fastened on the outer side of the tile footing. Pressures developed here were approximately twice those found when the soil was not restrained and could expand into the tile openings. Seven months after this foundation had been in ground, the soil pressure against the steel plate was 9 psi or 1296 lb per sq ft. Just picture what this could do to a small house with ordinary foundation.

Wide trenches were used on both sides of the foundation of the ceramic house and these were back-filled with soil. To date much swelling pressure has been relieved by compaction of this back-fill.

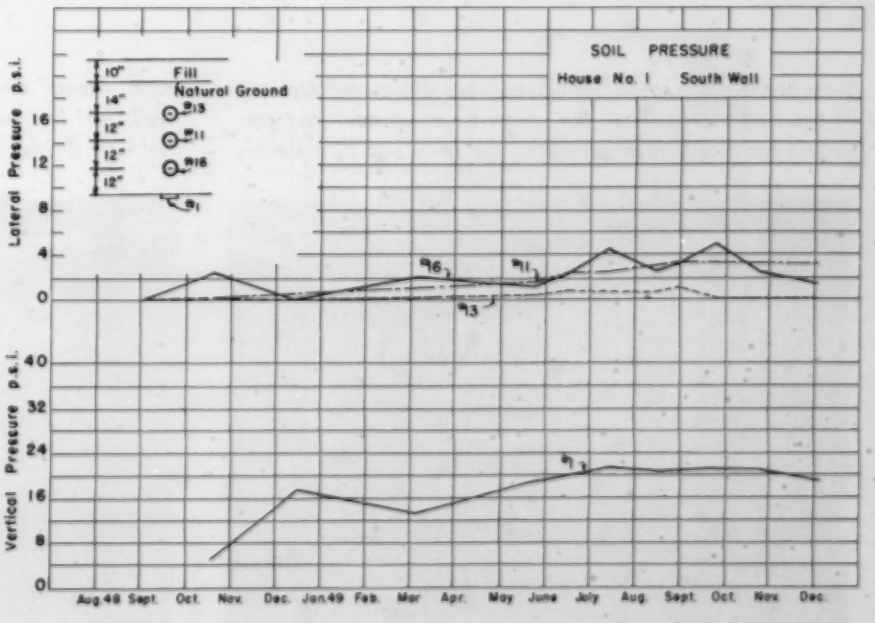
It is interesting to note the large amount of settlement and differential movement that occurred with the ceramic house foundation (top figure, left page) with no visible cracks being observed.

With the frame house, the soil at one point became saturated and lifted the spot footing there almost 2 in. This showed up in irregular floors, and in this vicinity carpenters had to plane off the bottoms of the doors many times.

The expansion of the soil and consequent movement of the spot footings of the frame house show that they are not at all satisfactory for a clay soil that will swell considerably during a rainy season.


SOIL PRESSURE
House No. 1 North Wall
Fill
Natural Ground
Steel Plate
Lateral Pressure p.s.i.
Vertical Pressure p.s.i.
Aug.48 Sept Oct. Nov. Dec Jan49 Feb. Mar Apr May June July Aug. Sept. Oct. Nov. Dec

The two graphs on this page plot soil pressure readings for the all ceramic house. The one above gives pressures developed on the uphill side and the one below, downhill. The greatest horizontal pressures occurred on the uphill side, and also the recordings at lower levels show greater pressures than those near the surface. The latter fact is probably due to densifying of the backfill near the surface. Note curve #15 above which shows pressures approximately twice those found when the soil was allowed to expand into clay tile openings. The bottom curves show vertical pressures developed under foundation walls which were from two to four times the horizontal pressures recorded


SOIL PRESSURE
House No. 1 South Wall
Fill
Natural Ground
Lateral Pressure p.s.i.
Vertical Pressure p.s.i.
Aug.48 Sept. Oct. Nov. Dec. Jan.49 Feb. Mar Apr. May June July Aug. Sept. Oct. Nov. Dec.

Large music studio in Norwegian broadcasting house employs slotted plywood with sound absorbent material behind to give reverberation control and interesting wall appearance as well

ARCHITECTURAL ACOUSTICS

By Richard H. Bolt and Robert B. Newman

Article 3, Part Two: Reverberation. (Concluding Article)

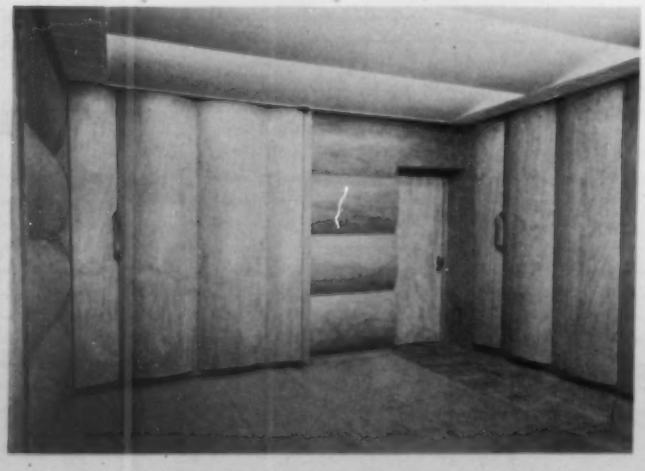
In Part One of this article we have discussed a number of the problems in the control of hearing conditions in rooms. Design criteria for background noise, loudness, and distribution of sound were considered and here in Part Two we shall consider the fourth factor, reverberation.

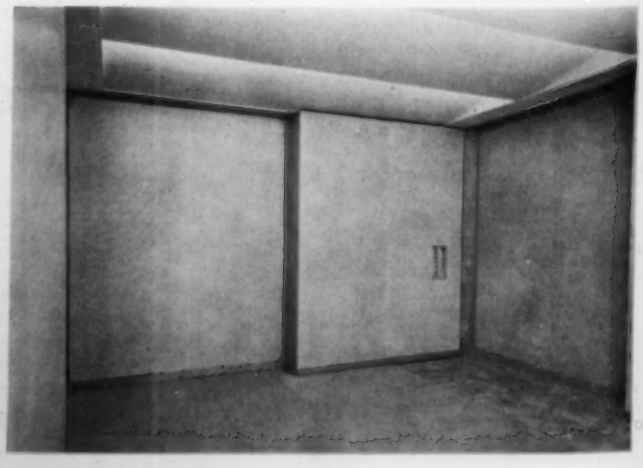
Reverberation Criteria

Reverberation is the prolongation of sound after the source is stopped. A certain amount of reverberation is desirable in a room, particularly to contribute to the quality of singing tone — to add richness and fullness to musical sound. Also, the loudness of a sound increases somewhat as the reverberation increases, and a small amount of this increase can be very useful. Beyond certain limits, however, increased reverberation causes confusion through excessive overlapping of sounds with others that have not yet died out. In the case of speech this overlapping reduces the Percent Articulation in a manner that can be both predicted and measured (Part One of this article).

A quantitative rating of reverberation is given by the reverberation time T, defined as the time, in seconds, for the sound level to drop 60 decibels. This can be measured in a room by various instruments, such as the graphic level recorder. A sample record is shown in Fig. 1, where the method of obtaining the value of T is indicated graphically.

Swiss broadcasting studio has hinged walls with curved plywood on one side to provide a "live" room for music (left) and perforated sound absorbent panels on the other side to make the room "dead" for speech. For example, the left panel in the rear wall (left) has been pulled in front of the door resulting in the flat wall surface as at right. Various combinations are possible





Pricam photos

Since, as we have noted, frequency characteristics are important, reverberation is measured at several different frequencies by using differently adjusted tones or by using a set of filters which pass just one range * of frequencies at a time.

The reverberation time measured in a completed room should be found to lie within an optimum range of values. Commonly accepted criteria for optimum T are shown in Fig. 2. Different types of music and speech call for differences in T, and in all cases the optimum T increases with the volume of the room. This increase is related to the above mentioned manner in which loudness increases with T. As the room gets larger the sound is spread more thinly and is thus reduced in level; this decrease can be partially compensated by letting the reverberation increase.

The proper frequency characteristic of T is shown in Fig. 3. The shaded range allows for variations normally met in accepted practice, for minor refinements in frequency characteristic that may be desirable in special cases, and for some minor differences in the judgments of various specialists. Almost any room with reverberation values lying in or very near the optimum ranges shown in Figs. 2 and 3 will be satisfactory, *if* the other acoustic criteria are properly satisfied. No room that deviates widely from these reverberation values will have good hearing conditions.

Reverberation Control

The reverberation time in a room is determined by the volume of the room and the total amount of sound absorption in the room, and the sound absorption in the room is determined by the characteristics of the finishes and furnishings. In a previous paragraph we have seen how we observe the reverberation time in an existing room. In many cases we wish to modify the reverberation time of a room, and in order to do this with some assurance of the final result, we must go through a certain amount of calculation on existing and projected conditions. More often we wish to design a new room for good hearing conditions without having to apply "corrective" measures after the room is completed. It is well to have some understanding, then, of how and to what degree the usual materials in a room absorb sound and how we can design a room to have ideal reverberation characteristics.

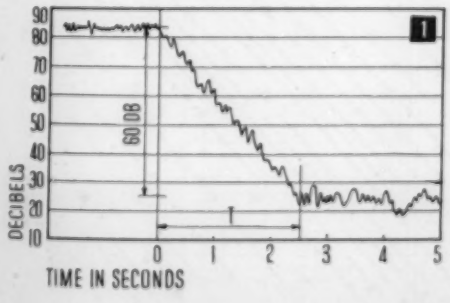
Sound is absorbed either by dissipating its energy in frictional drag in porous materials such as fabrics, carpeting, etc. or by inducing flexural vibration in wall panels, floors, etc. All materials absorb some sound, but for the hard massive materials such as concrete, we can neglect the absorption.

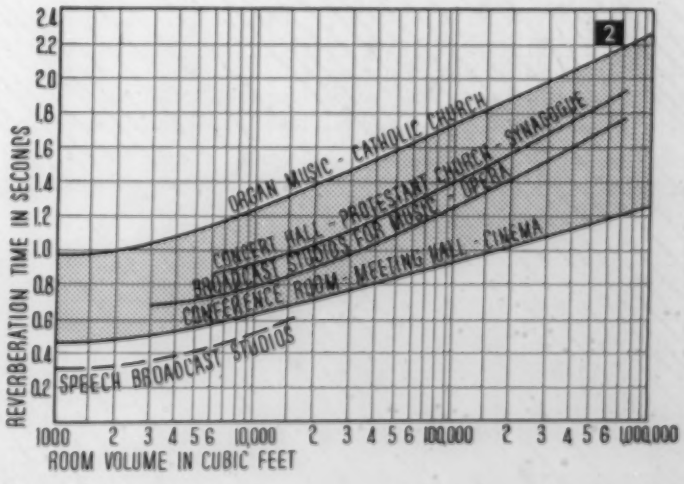
In porous materials (of importance in this connection are materials with interconnecting interstices of the order of .001 in.) the air particles which are set in motion by the sound arriving at the surface of the material encounter a certain frictional drag in moving in and out of the material and thus give up some of their energy in heat. This then decreases the energy in the reflected sound wave by as much as 90 per cent or more in many materials. The fraction of the incident energy which is absorbed (absorption coefficient) varies with frequency, depending on several physical properties of the material — thickness, porosity, etc. The absorption coefficient for most porous materials is smaller at the low frequencies and more or less uniform above some middle range frequency (see Fig. 4). In order to absorb

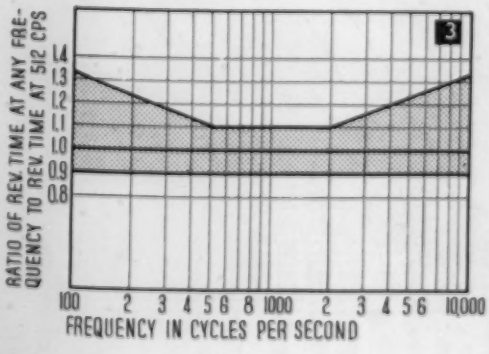
* *Commonly called frequency band.*

Courtesy Kilnoise: George Lohr photo

Above: acoustic plaster is perforated with stipplers to make it repaintable and still maintain high efficiency. Below: only periphery of this church auditorium ceiling is covered with acoustic tile leaving center free to reflect sound down to the audience





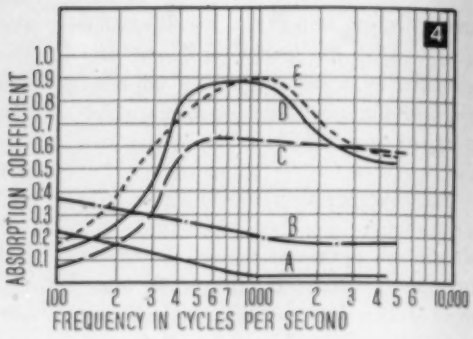


1. The reverberation time of a room is the number of seconds it takes, once a sound has ceased, for the sound level to drop 60 db. 2. Optimum reverberation times for various types of rooms; speech studios are a special case. 3. Reverberation time at any frequency on chart will generally be satisfactory if it falls within shaded area

low frequency energy effectively (and this is important in listening rooms if we wish to avoid a "'boomy" characteristic) we must use very thick sound absorbents, usually 4 in. or more in thickness. The effectiveness of many of the thinner materials can be increased by furring the material out from the firm backup and leaving a free air space behind.

Fortunately some finish materials furnish, by panel vibration, considerable absorption in the range where the porous materials are inefficient. The resonant frequencies of wood panels of usual size employed in room finish, for example, lie in the lower frequency ranges and seldom are above about 500 cps. When a panel of any sort vibrates in resonance it takes energy from the impinging sound wave in the resonant frequency range and thus gives useful sound absorption. Some panels such as metals and many of the plastic materials have rather sharp resonances and of consequence absorb sound energy only in narrow frequency bands. Wood panels and other materials which give a dull thud rather than a musical "bong" when thumped, have broad resonance characteristics and absorb energy over a considerable and useful range of frequencies (see Fig. 4). It is important when we use panel absorption on rooms that we randomize the size of the panels so all will not absorb sound energy in the same frequency band, but rather have absorption over a wide range of low frequencies.

4. Shows how the sound absorption of various materials changes with frequency. **A:** *⅜ in. plywood, random braced.* **B:** *two sheets ⅛ in. plywood, random glued, ⅛ in. spacing.* **C:** *½ in. perforated tile cemented to plaster.* **D:** *1 in. perforated file cemented to plaster.* **E:** *1 in. perforated tile on 1 in. furring*



We thus have at our disposal for the control of reverberation in rooms and for the achievement of the characteristics specified in Figs. 2 and 3, two mechanisms, which fortunately supplement each other. For low frequency control we can employ panel absorption, and for control of the middle and high frequencies, porous materials.

Calculating Reverberation Time

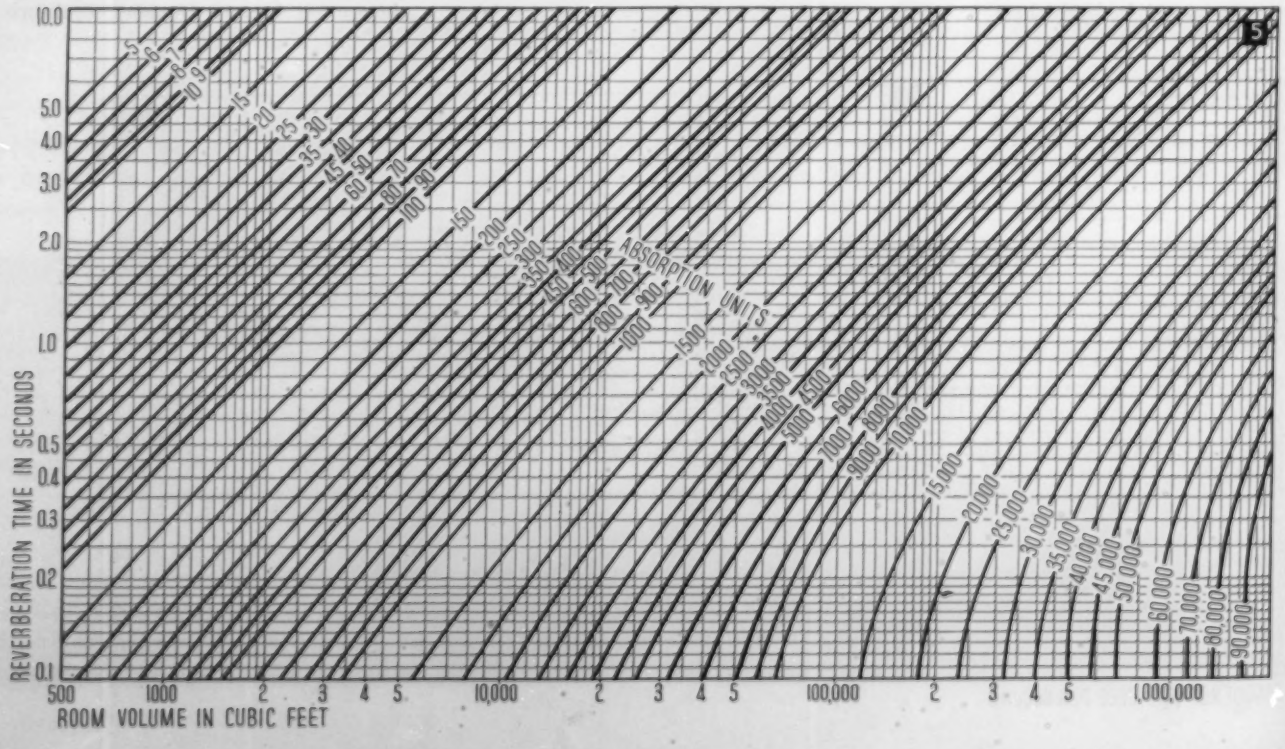
In order now to compute the reverberation time of a room we must first determine its volume. This should be the total free volume, including recesses if they are not too deep. If there is a large stage, joined to an auditorium through a relatively restricted opening, for example, we would exclude the stage volume in calculating the reverberation time of the auditorium, but we should check the *T* of the stage itself.

Next we must determine as accurately as possible the total amount of sound absorption present in the room. This involves a tabulation of all the surface areas, furnishings and occupants. These factors are usually easily determined for an existing room, but in proposed construction, one must make reasonable assumptions as to finishes and furnishings.

For most of the common materials used to finish rooms, the absorption coefficients are readily available in the technical literature. If, for example, we have 2000 sq ft of furred plaster in the room, we find in a listing of materials that furred plaster has an absorption coefficient of .06, we simply multiply 06 x 2000 = 120 units (sabins) of absorp-

(*Continued on page 220*)

5. Chart for calculating reverberation time or sound absorption of a room



YEAR'S OUTSTANDING STEEL BRIDGES

Jury appointed by the American Institute of Steel Construction to choose the most beautiful steel bridges opened to traffic in 1949. Left to right: T. R. Higgins, director of the Institute, Prof. Robert L. Lewis, Walter E. Jessup, Kenneth Franzheim, Eero Saarinen and Lawrence MacKinney

Pinto Creek Bridge, Superior, Arizona, Class II (less than 400 ft, cost over $500,000) designed by Highway Dept.

Tenth St. Bridge, Atlanta, Ga., Class III (less than 400 ft, cost under $500,000) designed by Robert and Co., Assoc.

North Main St. High Level Bridge, Akron, O., Class I (span 400 ft or more) designed by Wilbur Watson Assoc.

Passaic River Bridge between Clifton and Rutherford, N. J., most beautiful movable bridge, designed by N. J. Highway Dept.

OFFICE BUILDING INNOVATIONS

DESIGN of the Five-Fifty building, under construction in Miami, Fla., evolved directly from the special requirements of its occupants. It is a cooperative of 11 physicians, one medical laboratory, three law firms, and the architect, Robert Law Weed and Associates. Due to the large medical tenancy, more than the usual amount of plumbing was required. Thus the supporting columns were pulled back from the outside wall into the middle of the office space so that all columns would have soil and vent stacks up them.

The floors are flat plate construction. Slabs are flat on the bottom, making it possible to reduce materially the story heights. Since floors are cantilevered on all sides, the walls needed to be light. They consist of panels 8-ft wide, one story high and 4-in. thick, and are made of pumice concrete with a white cement, faced with a quartz aggregate. Panels sit on clip angles at the bottom and are held by two bolts on top.

City of Miami
News Bureau Photo

MANUFACTURERS' LITERATURE

Improved Classification System For 1951 Sweet's File

The purpose of filing is to insure finding. Since product selection is based on comparison of competing products, the problem of classifying and indexing manufacturers' catalogs is not an easy one to solve: it should enable the catalog file user to find any particular manufacturer's catalog, or a catalog on any particular type of product, and to find catalogs of competing products adjacent to each other.

Research and experience in making manufacturers' catalogs quickly and easily accessible for use have resulted in many improvements initiated and employed by Sweet's Catalog Service Division of F. W. Dodge Corp. The latest improvement, the one to be employed by Sweet's for its next series of catalog files, is a simplification of the method currently in use.

The file will consist of 33 major product sections. Within each of these major sections will be the logical subsections according to products or users of products. The manufacturers' catalogs in each sub-section will be arranged in alphabetical sequence by manufacturers' names.

The different symbol to be used for each manufacturer's catalog will consist of three parts:

(1) The major section number

(2) followed by the sub-section letter.

This number and this letter in each case will be above a line.

(3) Under the line will be, in a capital type, the manufacturer's initial letter, followed by the second letter in the manufacturer's name in lower case.

For example, to find Reynolds Metals Co., Inc. (Aluminum Div.):

This catalog will be found in the metals section, which will be Section 6. Sub-section *a* is for metals, aluminum. Since this sub-section will also contain the catalogs of other manufacturers of aluminum products, Aluminum Company of America, The Kawneer Company and Permanente Products Company (as in SA '50), the symbol to be used in finding the Reynolds catalog will be:

Section no. → 6a ← sub-section letter

Re ← first two letters in manufacturer's name

Under this system, the catalogs in the aluminum sub-section under metals will be:

Aluminum Company of America	$\frac{6a}{Al}$
The Kawneer Company	$\frac{6a}{Ka}$
Permanente Products Company	$\frac{6a}{Pe}$
Reynolds Metals Company	$\frac{6a}{Re}$

In case there is a duplication in the first two letters of manufacturers' names, the second manufacturer in alphabetical sequence will have the first three letters of his name used to avoid duplication of the symbol within a particular subsection; but this will rarely be necessary.

Functionally, a catalog file in a field of technical products corresponds roughly with a department store of consumer products. The departmentalization of products is for the same basic purpose as the sectionalization of a catalog file — to make product comparisons and selections as easy and as time-saving as possible. Each is a shopping center — a market place — an efficient means of getting buyers and sellers together — resulting in lower unit marketing costs and prices.

For the filing and finding of manufacturers' catalogs which are not prefiled and distributed in Sweet's File, architects may wish to file such catalogs alphabetically under the section number and sub-section letters so that the system used in an office for manufacturers' catalogs received in individual form and those prefiled in Sweet's are coordinated.

Reprints of this complete classification will be supplied to readers of ARCHITECTURAL RECORD without charge on request to: Sweet's Catalog Service, 119 W. 40th St., New York 18, N. Y.

Major Product Classifications For 1951 Sweet's File Architectural

1. Contractors and special services
2. Foundations
3. Structural Systems
4. Masonry
5. Wood
6. Metals
7. Glass, plastics
8. Roofing and siding
9. Waterproofing, dampproofing
10. Thermal insulation
11. Sound Control
12. Lath, plaster, wallboard
13. Flooring and wall covering
14. Floor treatment and maintenance
15. Paints and finishes
16. Doors
17. Windows
18. Hardware
19. Door and window equipment
20. Skylights, ventilators
21. Store fronts
22. Partitions, wirework, fences
23. Furnishings, special equipment
24. Kitchen and food service equipment
25. Bathroom, washroom, laundry equipment
26. Waste disposal, cleaning equipment
27. Pipe and fittings
28. Water supply and drainage
29. Air conditioning and heating
30. Electrical distribution
31. Lighting
32. Communication
33. Vertical transportation

Metal Doors and Frames

VMP Architects' & Builders' Manual Data Sheets. Reviews a varied line of metal door and frame units. A great number of construction, installation and profile details are given. Tables list dimensions and catalog numbers of the units. Each door type is accompanied with application and specification notes. 38 pp., illus. Virginia Metal Products Corp., Orange, Va.*

Wood Window Sash

Ponderosa Pine Windows, Sash and Screens (Commercial Standard CS163-49). Provides specifications for standard sizes, layouts and construction of pine

stock windows, sash and screens. The standard also contains specifications for casement, cellar, cupboard, hot bed, picture, porch, storm and barn or utility sash and transom windows. Both full window and half window screens are covered, as well as screens for one-light sash. Printed copies may be obtained for 15 cents per copy. Superintendent of Documents, Washington 25, D. C.

Furniture

Dunbar For Modern. Features the Dunbar line of furniture, with illustrations of many room settings. A brief history of modern furnishings is included, entitled "What Is Modern." Also illustrated are wallpapers, art reproductions, dinnerware and lamps suggested as appropriate for modern rooms. 28 pp., illus. Price 25 cents. Dunbar Furniture Manufacturing Co., 227 E. 56th St., New York, N. Y.

Tile and Concrete Slabs

Combination Tile and Concrete Floor and Roof Slabs (Technical Notes On Brick and Tile Construction, Vol. 1, No. 8, Aug., 1950). This issue of the Structural Clay Products Institute monthly bulletin treats the use of hollow tile to reduce the weight of concrete slabs. A number of typical structural details are included. 4 pp., illus. Structural Clay Products Institute, 1949 Grand Central Terminal, New York 17, N. Y.*

Air Cooling Equipment

Spray Type Air Washers, Humidifiers and Dehumidifiers (Bulletin No. 7). Describes equipment for use on industrial and comfort cooling installations. Illustrations and specifications are given of the component parts. Details and size and weight tables are included for each type of machine. 24 pp., illus. Buensod-Stacey, Inc., 60 E. 42nd St., New York 17, N. Y.

Wood Trusses

Wood Frame Teco Trussed Rafters. Booklet discusses features of wooden roof trusses joined with Teco connectors. Sketches of appropriate truss shapes and photographs of typical installations are shown for churches, commercial and industrial buildings, homes, schools and apartments. Notes and details are also given on special roof framing problems. 12 pp., illus. Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.

Fireproofing With Plaster

(1) Typical Fireproofing Details For Steel Columns; (2) Typical Fireproofing Details For Suspended Ceiling Under Non-combustible Construction. Folders give information on fireproofing with light-weight Permalite plaster. Each includes a detailed drawing and a short form specification of the construction. The first folder gives necessary specifications for getting fire ratings of 1, 2, 3 or 4 hours. The second is on construction which has a 4 hour rating. 4 pp., each, illus. Great Lakes Carbon Corp., Building Products Div., 18 E. 48th St., New York 17, N. Y.

Unit Heaters

National Unit Heaters For Horizontal Delivery and Down Flow Delivery (Catalog N. 575). Lists features and component parts of the heaters. Application and technical data are given, including: rating and capacity tables, steam and hot water conversion factors, dimension tables, and piping and wiring diagrams. Installation and maintenance instructions are also given. 16 pp., illus. The National Radiator Co., Johnstown, Penn.

Aluminum Venetian Blinds

Plastic Lume "400." Folder discusses features and qualities of plastic-enamel finished aluminum alloy blind slats. A specification data table gives notes on material and processing, finishing, forming, dimensions, weight and performance. A list of the colors available is also given. 4 pp., illus. Lando Products, Inc., 780 Golden Gate Ave., San Francisco 2, Calif.

Cabinet Showers

Weisway Cabinet Showers (Catalog No. 450). Presents several models of cabinet shower stalls, with descriptions and specifications. Color chips are included for finishes available. Typical plan layouts are given for new and remodeled houses. Accessories for the units, roughing-in dimensions, and construction and installation data are included along with many details. 24 pp., illus. The Henry Weis Manufacturing Co., Inc., Elkhart, Ind.*

Air Cleaner For the Home

Electronics Give You a New Key To Cleanliness In The Home (Booklet B-5156). Describes the features of the Precipitron electronic air cleaner for the home. Notes are included on the operation, construction and installation of the unit. A cutaway view and data on weight and dimensions also are included. 16 pp., illus. Westinghouse Electric Corp., 125 Damon St., Hyde Park, Boston 26, Mass.*

Awnings for Store Fronts

Astrup Awning Equipment For Modern Store Front Construction. Bulletin gives descriptions of several types of awning equipment, including: awning fabrics, lid and awning operating mechanisms, equipment for aluminum roller awnings and operating gears. Details and sketches are given for many of the items. Photographs of typical installations and specifications also are included. 8 pp., illus. The Astrup Co., 2937 W. 25th St., Cleveland 13, Ohio.*

Surveying Instruments

Gurley Engineering Instruments (Catalog No. 50). Presents a line of engineering instruments for surveying and construction work, as well as for other fields. Among the items covered are transits, levels, alidades, plane table outfits, tripods, drawing boards and paper, current meters, plummets and hand levels. Each item is illustrated and described. 114 pp., illus. W. & L. E. Gurley, Troy, N. Y.

Light Dimmers

Radiastat and Autrastat Dimmers (Bulletin 76). Describes features, construction and operation of a line of dimmers for use in public and commercial lighting installations. Details and photographs are given of the component parts and mounting frameworks of the units. Wiring diagrams and tables of sizes and capacities are included also. 16 pp., illus. Ward Leonard Electric Co., Mount Vernon, N. Y.

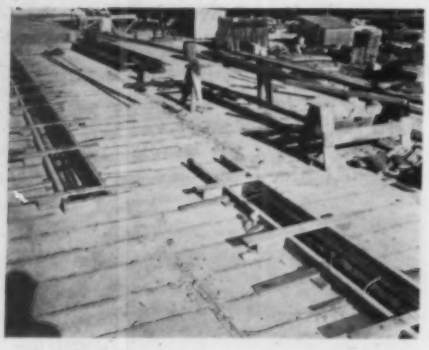
Fans and Blowers

Fans and Blowers By Moore (Catalog No. 5001). Contains design and rating data on pressure blowers and motors.

(Continued on page 246)

*Other product information in Sweet's File 1950.

PRODUCTS for Better Building



Cantilevered Concrete Slabs

A quickly erected, sturdy system of cantilever construction was said to have been effected at the new Trails End Court in St. Petersburg, Fla., by the use of hollow cast *Flexicore* concrete slabs. The architect was William B. Harvard, with John B. Dodd as Associate. Wings were designed with 16 ft wide rooms, flanked by 8 ft wide cantilevers on both sides. A 32 ft continuous slab was required. To achieve this, two 16 ft slabs were used. The slabs were supported near their centers on the outside walls. A 12 in. space was left between the ends of the slabs in the center of the room. In this space 12 by 10 in. steel reinforced beams were cast. Concrete, reinforced with ½ in. dowels, on 2 ft centers, was vibrated 18 in. into the Flexicore cores at the same time the beams were cast to form a solid roof structure. The slabs were left exposed for the ceilings. Roofs were insulated with up to 4 in. of vermiculite fill and weatherproofed with tar and gravel. Windstorm and fire insurance rates were said to be lowered considerably by this method of construction. The long-span concrete building slabs are pre-cast in 6 by 12 in. cross section, and in inch variations of length up to 22 ft 6 in. Price Brothers Co., 1932 E. Monument Ave., Dayton 1, Ohio.

Color Control For Lighting

A compact and simply operated new system, called *Rollocolor*, has been developed to produce lighting in any of 500 color shades or effects. Four colored light sources are used — red, blue, green and white. They may be used in a great variety of set-ups, such as strips, spots or floodlights, for displays, stages or decorative lighting of interiors.

The control unit itself is encased in a metal cabinet the size of a portable radio. A single control dial regulates light colors and intensities, which are predetermined and indicated on the panel. A supplementary motor, called a "Dynamic Control," may be used to operate the unit automatically through the entire color range, or for various time cycles. Imperceptible changes in color gradations are produced by varying the output voltage of the transformers to change intensities, and by the use of cam-operated micro-switches to cut in or out any of the four basic color circuits. Consolidated Edison Co., 4 Irving Place, New York, N. Y.

Plastic Paint

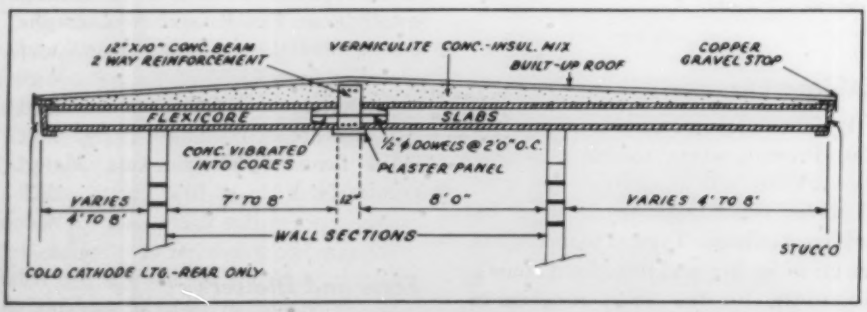
Corrosile plastic paint is claimed to protect against corrosion, rust, erosion and rot of wood, metal and masonry. Liquids, fumes and electrolytic action are said to have no effect on the paint. While particularly useful as a finish for industrial plants, machinery, structural steel, etc., the paint is equally applicable to such areas as chemical laboratories, kitchens or bathrooms.

The material consists of a series of unpigmented and pigmented coatings, composed of vinyl resins. These are blended with plasticizers and high boiling point solvents. The standard finish is semi-gloss, but it can also be supplied in flat. The liquid may be applied by brush, spray or dip methods, and dries in one hour. As a liquid, the substance is inflammable, but when dry is claimed not to support combustion. Eighteen standard colors are available, including black, clear, white and aluminum. Custom colors may also be matched. The Corrosite Corp., Chrysler Bldg., New York 17, N. Y.

Oil-Resistant Wire

A gasoline- and oil-resistant wire, called *Geotrol*, has been developed to eliminate the usual lead covering. This is said to give a considerable saving in cost, weight and installation time. It is designed for wiring in conduit to gas

(*Continued on page 224*)



The two photos at top show finished and construction views of roof overhangs made of hollow cast concrete slabs. Lower photo and detail show construction of concrete beams used to tie slabs together

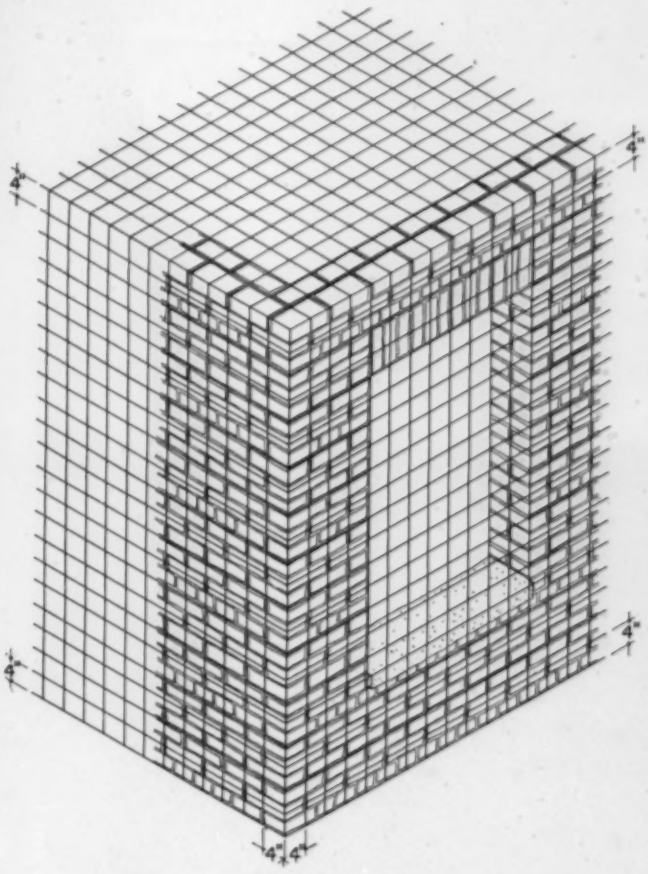
MODULAR COORDINATION: 1

Prepared with the cooperation of Structural Clay Products Institute

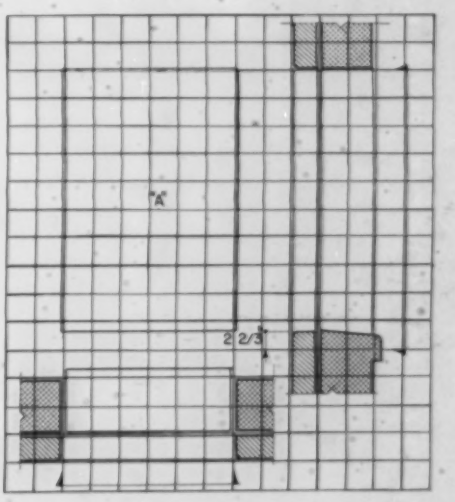
The Modular Coordination project has long sought to reduce costs of construction through the sizing of building products so they will fit together without alteration on the job. For the architectural drafting room, this requires dimensioning of building plans so they are related to these standard product sizes. Many architects who have employed such a method have found that, on the first projects, the modular system required more drafting time than the conventional methods. However, with greater familiarity with the system, they found that drafting time was substantially reduced. Standard details can be repeated throughout a structure, and modular dimensions are very simple to check. Contractors who have constructed buildings from modular designs have reported both reductions in cost and construction time and improvement in quality.

This study is based on the *A62 Guide For Modular Coordination*, prepared under the direction of American Standards Assn., and sponsored by the A.I.A. and the Producers' Council, Inc. The system is based on a three-dimensional grid of 4 in. modules, and applies to the height, length and width of buildings.

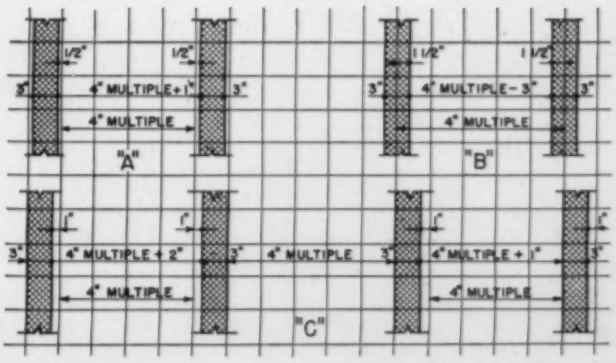
Non-modular sized items can be used, but a special detail must be worked out to relate the product

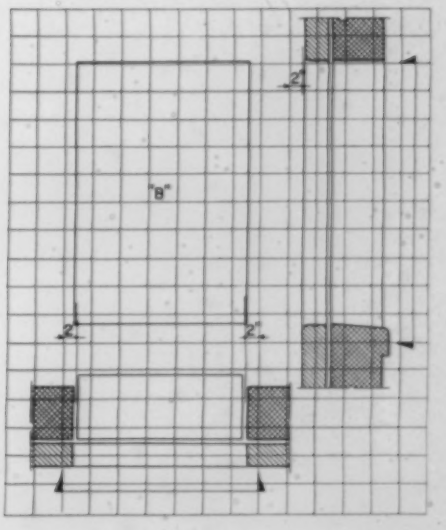


The three dimensional grid (above) applies in all directions



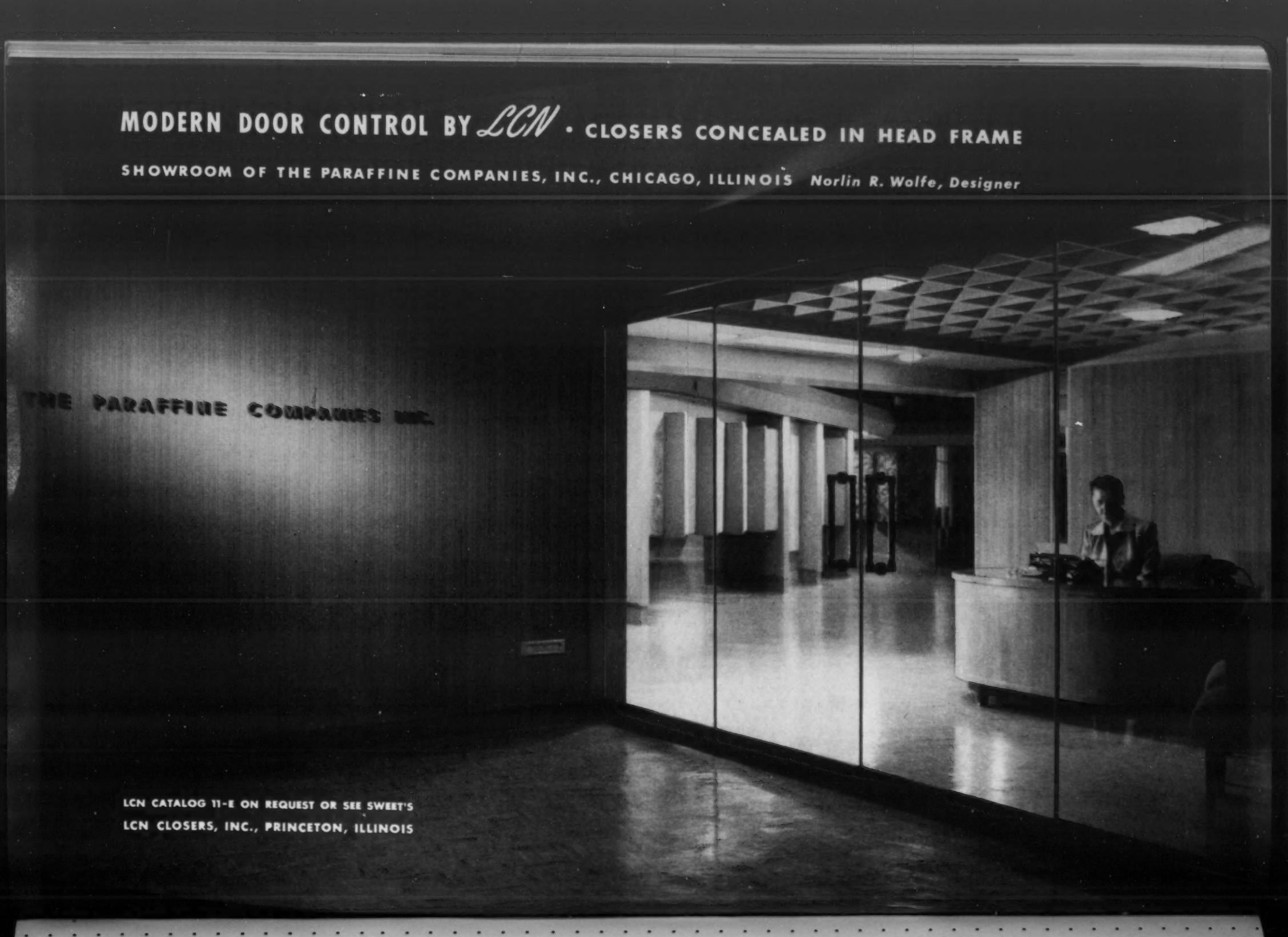
Properly placed, the section, elevation and plan fall in the same relative position with respect to grid lines; compare walls A and B (below left) with openings A and B (above and below). When all walls are not related to grid in same manner, as in C, many differences will occur between grid dimensions and actual dimensions, and must be identified on plans





MODERN DOOR CONTROL BY *LCN* • CLOSERS CONCEALED IN HEAD FRAME

SHOWROOM OF THE PARAFFINE COMPANIES, INC., CHICAGO, ILLINOIS *Norlin R. Wolfe, Designer*



LCN CATALOG 11-E ON REQUEST OR SEE SWEET'S

LCN CLOSERS, INC., PRINCETON, ILLINOIS

MODULAR COORDINATION: 2

Prepared with the cooperation of Structural Clay Products Institute

dimensions to the 4 in. grid. The same detail can be repeated wherever the item appears in the project. Thicknesses of floor and walls need not adhere to the module, as long as some part is referenced to the grid.

The selection of grid locations for critical parts of the structure, such as walls and floors, is one of the first decisions to be made in the development of a modular design. Because of the three-dimensional nature of the grid, all subsequent details are affected by this selection (see details, Sheet 1). It is advantageous to center walls between grid lines, or on a grid line. The difference in such cases between grid dimensions and actual dimensions is a single constant. This simplifies estimating quantity takeoff and the determination of the actual dimensions when they are needed. It often reduces the variety of lengths of framing members and other parts. When all walls are not related to the grid in the same manner, many differences must be identified on the plans.

In drafting practice, the grid itself need not be drawn on the plans. In preliminary work a grid may be used either on the drawings or under tracing paper. In the final drawings, a series of standard symbols may be employed to indicate the grid position. In the ASA System, points on grid lines are designated by an arrow, and points not on grid lines by a dot. For openings, the grid to which dimensions are referenced are identified by a half-arrow symbol.

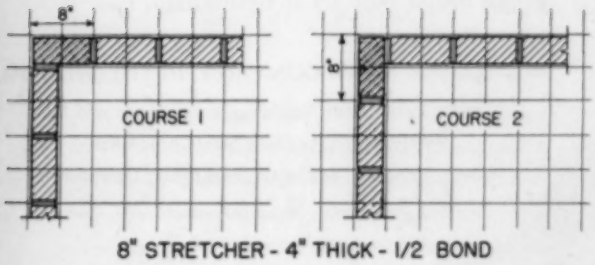
Modular details are used to show the grid location of a part of the structure, and the assembly of materials. To correlate them with building layouts, each must maintain the same relative grid positions.

Modular Masonry Units

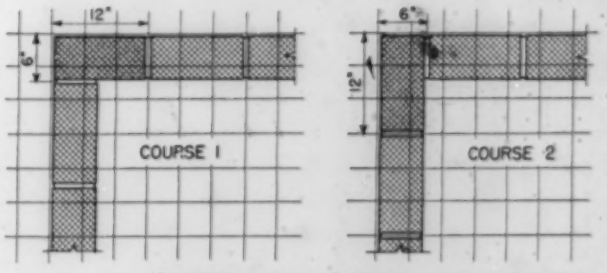
For the examples illustrated on Sheets 2 and 3, modular masonry is used to show how 4 in. planning flexibility can be achieved in modular layouts. The sizes of standard modular brick and tile are given in the following tables:

STRUCTURAL CLAY BRICK
Nominal Sizes, Inches

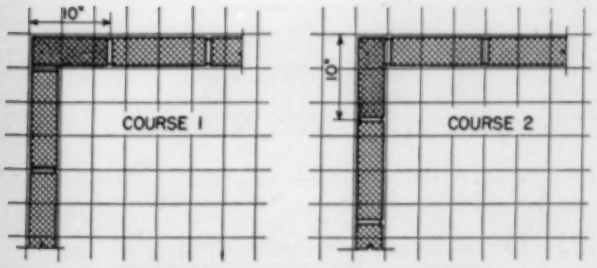
Full Size		Supplementary Sizes	
Height	Length	Height	Lengths
2⅔	8	2⅔	6, 4
3	8	3	6, 4
		2	8, 6, 4
4	8	4	6, 4
4	12	4	10, 8, 6, 4



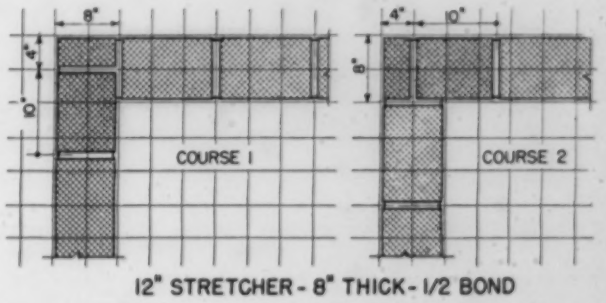
8" STRETCHER - 4" THICK - 1/2 BOND



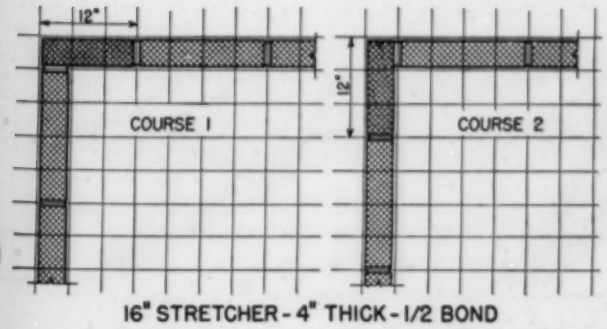
12" STRETCHER - 6" THICK - 1/2 BOND



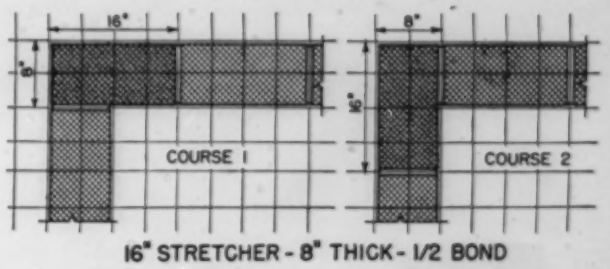
12" STRETCHER - 4" THICK - 1/2 BOND



12" STRETCHER - 8" THICK - 1/2 BOND



16" STRETCHER - 4" THICK - 1/2 BOND



16" STRETCHER - 8" THICK - 1/2 BOND

The corner detail which starts the joint pattern determines the horizontal grid position of masonry units. A half bond is started with units equal to stretcher length when the stretcher width is half its length. Other sizes require a supplementary corner unit. Small closure units for tiles may be used as shown with 12 by 8 in. stretchers

Floors can't shrink when built with these steel joists

All too often, floors shrink to cause wide, unsightly cracks between floor and baseboard—cracks which catch dirt and provide excellent breeding places for insects and vermin. This defect can be avoided in new buildings by using open-web steel joists in the floor construction.

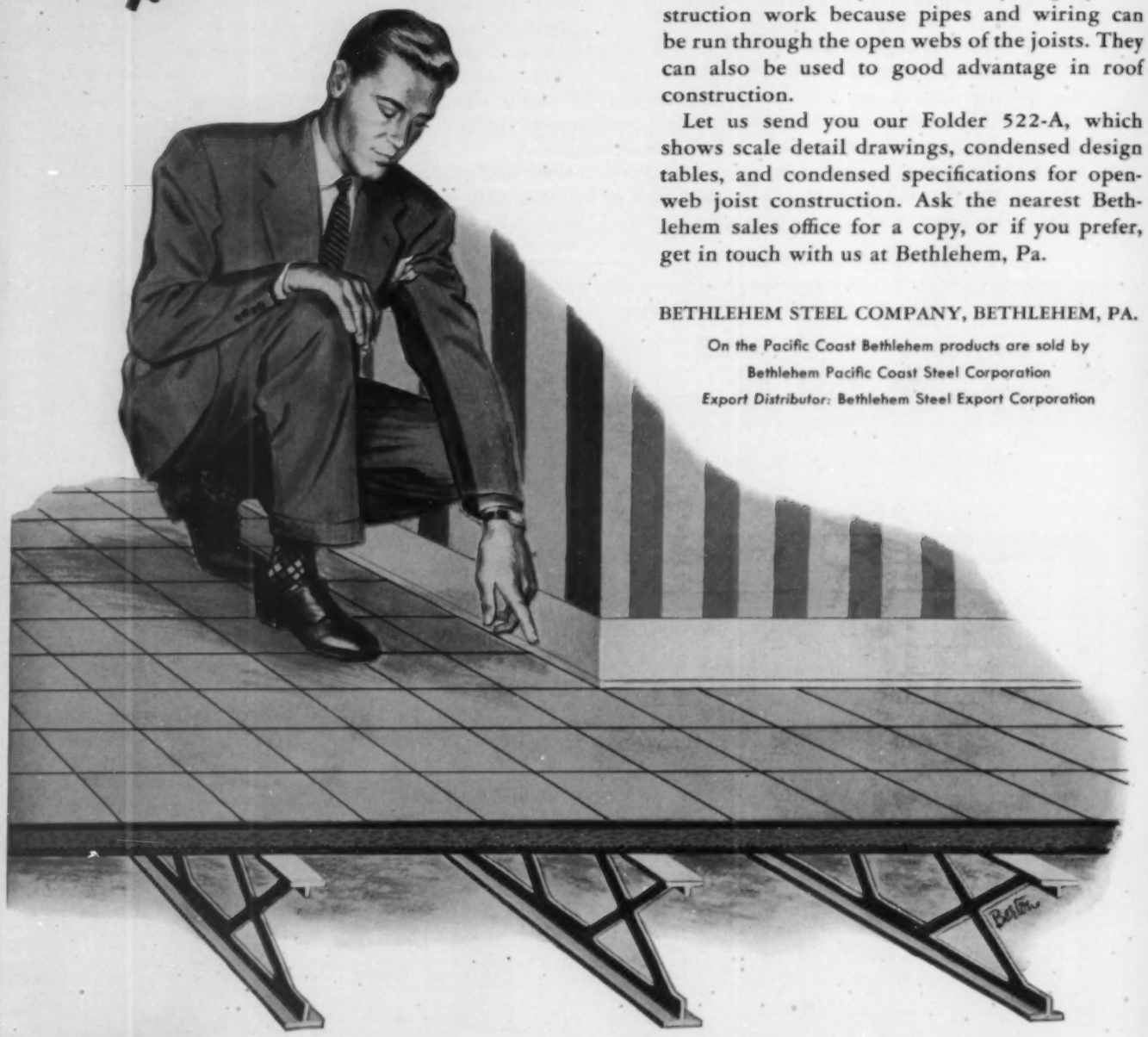
Bethlehem Open-Web Steel Joists are ideal for use in homes and light-occupancy structures because, when combined with concrete floor slab and plaster ceiling, they provide a type of floor construction which can't shrink. Floors built with these joists stay firm and true for the life of the structure.

Bethlehem Open-Web Joists are also noncombustible. They minimize vibration, and are immune to attack by vermin. They simplify construction work because pipes and wiring can be run through the open webs of the joists. They can also be used to good advantage in roof construction.

Let us send you our Folder 522-A, which shows scale detail drawings, condensed design tables, and condensed specifications for open-web joist construction. Ask the nearest Bethlehem sales office for a copy, or if you prefer, get in touch with us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation



★ BETHLEHEM STEEL ★ **BETHLEHEM OPEN-WEB JOISTS**

MODULAR COORDINATION: 3

Prepared with the cooperation of Structural Clay Products Institute

STRUCTURAL CLAY TILE
Nominal Sizes, Inches *

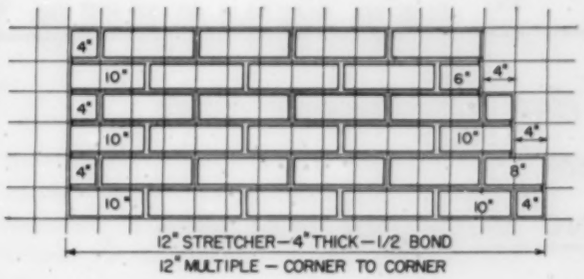
Full Size Height	Full Size Length	Supplementary Sizes Height	Supplementary Sizes Lengths
5⅓	12	5⅓	10, 8, 6, 4
		2⅔	12, 10, 8, 6, 4
		4	12, 10, 8, 6, 4
6	12	6	10, 8, 6, 4
		4	12, 10, 8, 6, 4
		2	12, 10, 8, 6, 4
8	12	8	10, 8, 6, 4
		4	12, 10, 8, 6, 4
8	16	8	12, 8, 4
		4	16, 12, 8, 4
8	8	8	4
		4	8, 4
12	12	12	10, 8, 6, 4
		8	12, 10, 8, 6, 4
		4	12, 10, 8, 6, 4

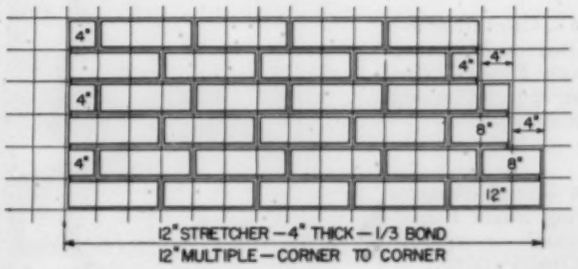
It is impractical for manufacturers to produce all of the sizes listed, particularly in a full range of textures and colors. Many of the nominal supplementary sizes* must be cut on the job, but some, as unglazed tile, are available in special "cutting units." Tiles require a special unit with finished ends for corners. Where 12 or 16 in. units are used, special lengths must be introduced to obtain 4 in. flexibility. Multiples of 6 or 8 in. maintain uniform wall patterns.

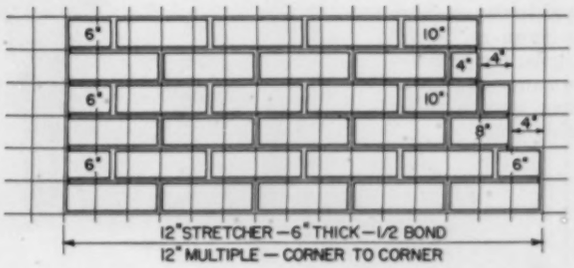
With the 2⅔ in. unit, grid lines coincide with horizontal mortar joints every 8 in., and a 4 in. supplementary unit is required to provide 4 in. flexibility, such as a 4 in. high rowlock header.

Horizontal layouts, including wall openings, involve only 2 and 4 in. multiple dimensions. Vertical nominal dimensions avoid fractions of inches except for the 2⅔ and 5⅓ in. course heights. Since 3rds of an inch are not given on the ordinary foot-rule, $\frac{5}{16}$ in. is used for ⅓ in., and $\frac{11}{16}$ in. for ⅔ in. The inaccuracy is inconsequential, provided it is not cumulative. Simple rules may be used for determining the location of a grid line with respect to the masonry at any point. This simplifies the checking of course heights, particularly for lintels, where it is usually essential that the head of the opening coincide with a horizontal mortar joint. For example, with brick 2⅔ in. high, alternate grid lines coincide with mortar joints. Any grid line which is an even multiple of 4 in. from the reference line will have the same relative position; any grid line which is an odd multiple will have the alternate position.

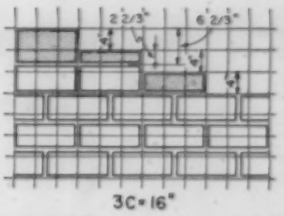
A similar rule for use with the 5⅓ in. high unit is: a grid line which is an even multiple of 8 in. from the reference line will have the same relative position; other grid lines will have one of three alternate positions.

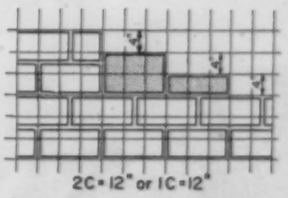


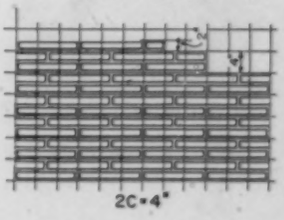


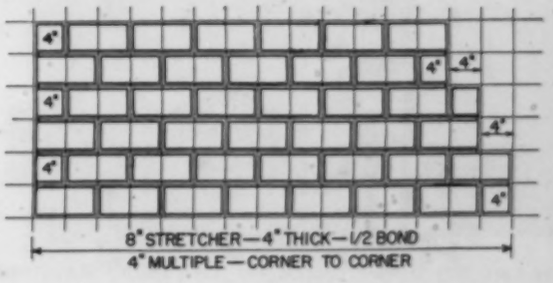


The ideal of the modular system is to achieve 4 in. flexibility ***horizontally*** *and* ***vertically.*** *Flexibility in wall lengths is shown at left and below: except for constructions employing 8 in. stretchers, supplementary lengths must be used. For wall heights, right, extra units are needed for all but 2 or 4 in. masonry course heights*





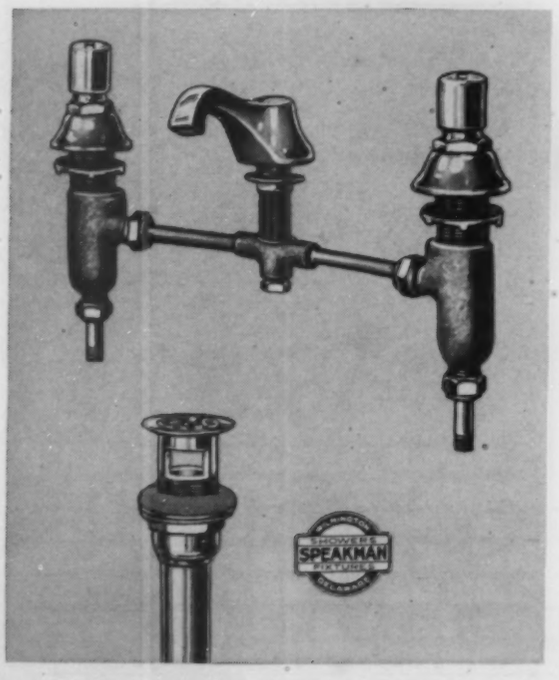




TRADITIONALLY
THE BEST IN BRASS

No Hammer...
No Roar...
No Rumble...

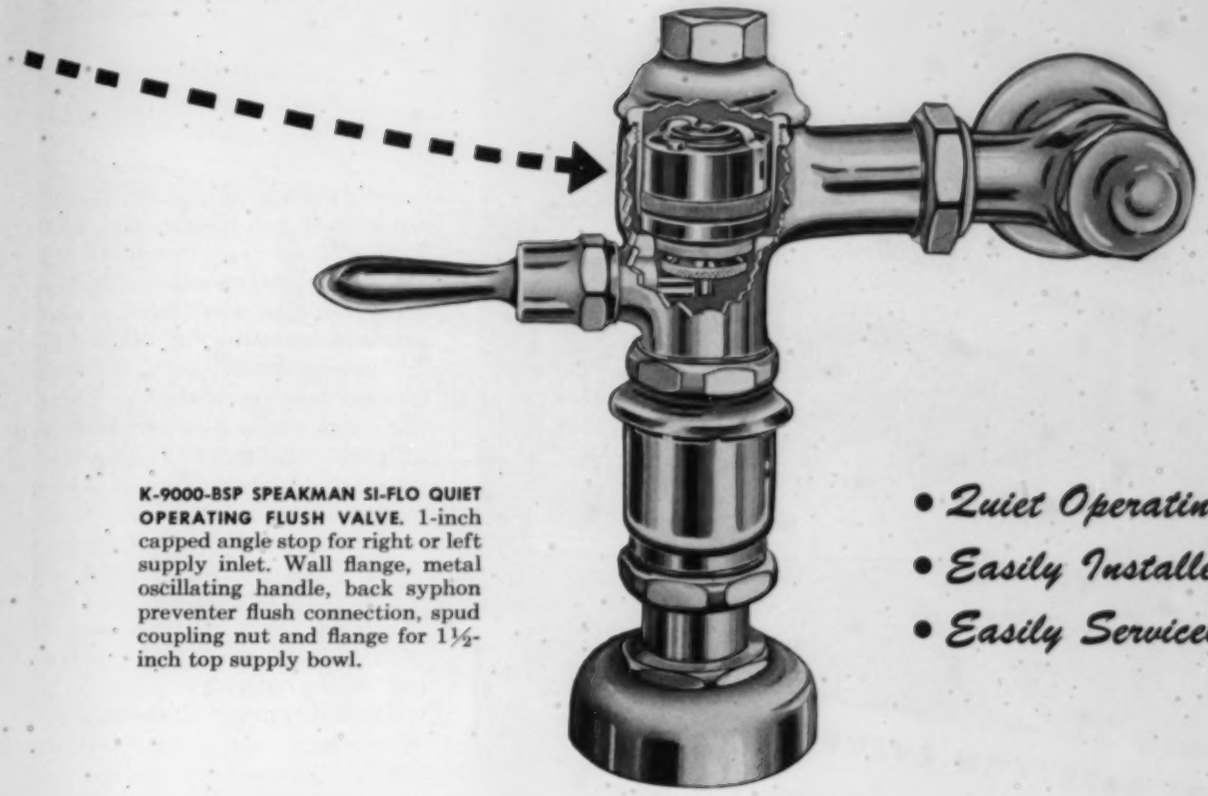
Stop Water-Waste... Cut Maintenance Costs
with
SPEAKMAN SELF-CLOSING METERING FIXTURES



S-4170 — Combination Push-Button Metering Lavatory Fixture. Permits washing in running tempered water.

S-4320 — Push-Button Metering Basin Faucet —for single or separate faucet installations.

These fixtures can be regulated to meter water volume from a "dash" to 1½ gals. per valve—non-hammering, non-dripping, non-clogging renewable unit.



K-9000-BSP SPEAKMAN SI-FLO QUIET OPERATING FLUSH VALVE. 1-inch capped angle stop for right or left supply inlet. Wall flange, metal oscillating handle, back syphon preventer flush connection, spud coupling nut and flange for 1½-inch top supply bowl.

- *Quiet Operating*
- *Easily Installed*
- *Easily Serviced*

IN SPEAKMAN *Si-Flo* FLUSH VALVES

SI-FLO—the original quiet operating flush valve—the valve that has made architects, engineers, plumbers and owners *quiet-conscious* in bathroom construction today.

Three big advantages recommend *Si-Flo* for economical installation and long-service life in hotels, hospitals, schools, institutions, apartment houses and homes.

1. **SI-FLO whispers, never shouts.** Freedom from annoyance and embarrassment is assured when you specify Speakman *Si-Flo*. Even under supply pressures as high as 100 lbs. per square inch, it eliminates hammering, knocking, line throttling and closing noises. *Si-Flo* stays quiet.

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THE RECORD REPORTS

WASHINGTON

(*Continued from page 24*)

to seek further improvements; determination of structural performance standards for various types of wall and floor construction; determination of stiffness requirements for wood floors to effect economies consistent with livability requirements; determination of design criteria for more economical wood frame walls, with emphasis on structural requirements consistent with large window spaces; studies of flame spread and fire resistance values; determination of performance standards for mastic cements and adhesive used on floors, walls and ceilings to insure longer life and more satisfactory service; development of standards and specifications for low-cost flooring materials.

National Academy of Sciences (quasi-government) — survey of housing research facilities and personnel and of research activities under way and completed.

National Bureau of Standards — determination of performance standards for a variety of flashing materials; determination of standards for reinforced lightweight aggregates; determination of the effects of cleaning detergents on various paint vapor barriers; contribution to the development of standards for design and installation of household plumbing systems; determination of standards for small heating systems for use in small houses; adaptation of thermal conductance factors to conditions of practical use in houses; development of design criteria for chimneys used in small houses; development of technique for measurement of heat loss due to ventilation and infiltration, as an aid to design of heating systems.

Public Health Service — development of performance standards for individual sewage disposal systems.

U. S. Weather Bureau — measurement and evaluation of effects of snow loads on various types of roofs in various sections of the country.

Dr. Richard U. Ratcliff, who directs the housing research division of HHFA, said two considerations become central as his program functions in the changing economy: first, the conservation of manpower and materials in housing construction and operation; second, application of controls over housing credit and con-

(*Continued on page 176*)

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"THE BEST SEAT IN THE HOUSE"

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Molded under tons of pressure, their thick ever-lasting surface is practically indestructible; their gleaming beauty is at home in the finest surroundings.

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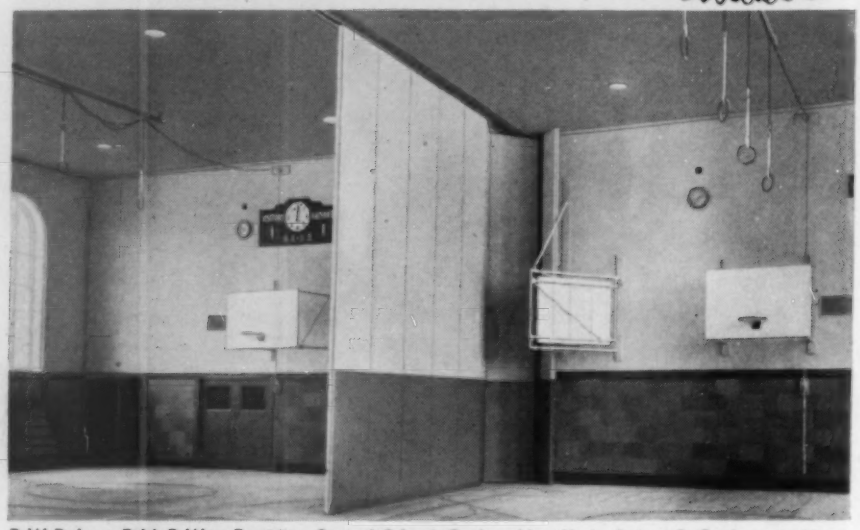
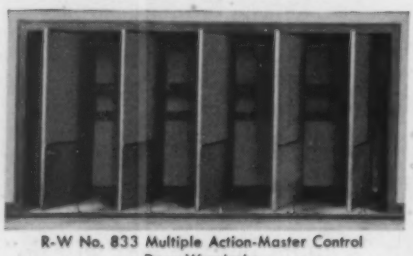


R-W DeLuxe FoldeR-Way Partition, Central School, Goshen, New York. Robert R. Graham, Architect.

Because of its high standard of excellence and performance, the R-W DeLuxe fully automatic electric soundproof folding partition is now specified by leading School Architects and demanded by progressive Boards of Education as the best solution to current problems of space and expenditure.

In the installation shown above, both side-jambs are insulated against the transmission of sound by the correct application of rubber gaskets. The clearance gap between the top of the doors and the underside of the ceiling-track is effectively soundproofed by rubber seals. Duck-covered, sound insulated, acoustically designed doors provide the ultimate in "sound-stifling" construction. Doors are positively locked to the floor without the use of any floor bolts, tracks, or mechanically operated devices. Electrically operated—you just turn the switch-key and R-W does the rest. The DeLuxe FoldeR-Way Partition goes into motion smoothly and silently—opening or closing automatically!

R-W Offers a Complete Line of Single and Multiple Action Classroom Wardrobes



R-W No. 833 Multiple Action-Master Control Door Wardrobe

Richards-Wilcox Classroom Wardrobes are outstandingly popular because they are designed to give maximum space for pupils' wraps without overcrowding—because simplicity of design and installation in wall recess means low cost. Wardrobes are available in Single or Multiple Action-Master Control Door units with chalkboards or cork boards. Each door opening accommodates eight to ten pupils.

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Uninterrupted R-W Service to HOME, INDUSTRY and FARM

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- In industry, conveyor systems to solve any overhead handling problem.
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- For the farm, barn door hardware up to any size, gable door fixtures, stay rollers, latches, etc, that perform up to par year after year.

Get all the facts about Richards-Wilcox cost-cutting, space-saving FoldeR-Way Partitions and Classroom Wardrobes now—write today or call your nearby branch office for complete information without obligation.

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OVER 70 YEARS

THE RECORD REPORTS

WASHINGTON

(*Continued from page 174*)

struction, based on a sturdy foundation of fact and analysis.

As to how the housing agency got into the research business in the first place, the Director said it was because critical research needs were not being met by the housing industry itself or by other non-governmental means. He promised that as housing research by industry, business, and other private business expands, federal activities will be modified to avoid overlapping and duplication.

Right now the research division is changing its tactics; adjusting activities to the international situation, as Dr. Ratcliff put it. No basic redirection of the program is contemplated. But its scope is being narrowed down to concentrate more intensively upon defense problems. This does not mean the function loses sight of long-range results. The findings are expected to be not only of immediate value but suitable for the broader application to the long-term chronic housing ills as well.

Building Code Interest

The federal housing agency, as well as a multitude of private groups, has expressed interest in the basic building code so recently distributed by the Building Officials Conference of America. The Foley agency long has encouraged a more uniform acceptance of modern building standards and methods. While the government group has issued some statements on the desirability of a standard performance code, it cannot go too far in this direction because of individual product barriers and a wide variety of present state and local applications.

The first printed copies of B.O.C.A.'s basic code were distributed recently. This followed publication June 7 of the abridged building code, which condensed the full code into a version especially acceptable for smaller communities. Both of these codes are of the performance type, permitting use of all materials or methods that meet functional performance standards established in the basic version.

The abridged code already has been adopted by many cities with population ranging from 10,000 to 15,000. Many larger cities have indicated they intend

(*Continued on page 178*)

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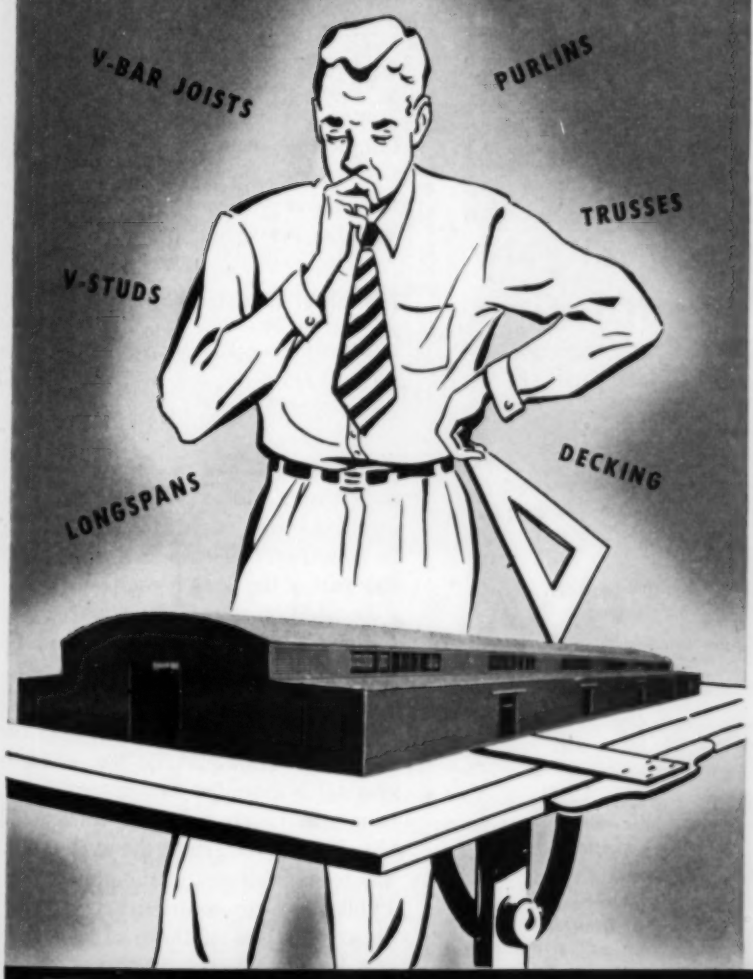

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When opened slightly the SEALUXE-BROWNE Window makes a vertical flue. Fresh air comes in at bottom and foul air goes out at the top. No drafts. No wind-blown rain.

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THE RECORD REPORTS

WASHINGTON

(*Continued from page 176*)

to adopt the larger, basic code that was just issued. The State of Connecticut is reportedly considering adoption of both the basic and the abridged volumes. These would serve as statewide codes, the abridged version applying to all centers of less than 7500 population, and the larger code to all other cities.

These are the first codes to employ the nomenclature, definitions and classifications recommended by the Joint Committee on Unification of Building Codes. This group is under the chairmanship of W. E. Mallalieu, National Board of Fire Underwriters.

Hospital Plant Grows

The number of hospital construction projects approved under the Hill-Burton Act as administered by the U. S. Public Health Service reached 1432 on August 1. This volume of new construction and improvement to existing hospitals projected a future addition of 69,893 beds to the nation's institutional supply when this part of the work is completed.

In addition, construction of 262 new health centers has been approved by Public Health under the same program. The federal contribution to this vast volume of hospital building will run in the neighborhood of $358,753,800. The federal aid is extended to non-profit, city, county and state hospitals which could not afford to undertake the work if they had to pay full cost of the project. The Public Health contribution averages about one-third of the total estimated cost for all projects approved.

Of the 1432 jobs now listed, 196 hospitals were in operation as of August 1. Another 806 were under construction and 430 were in the initially approved category.

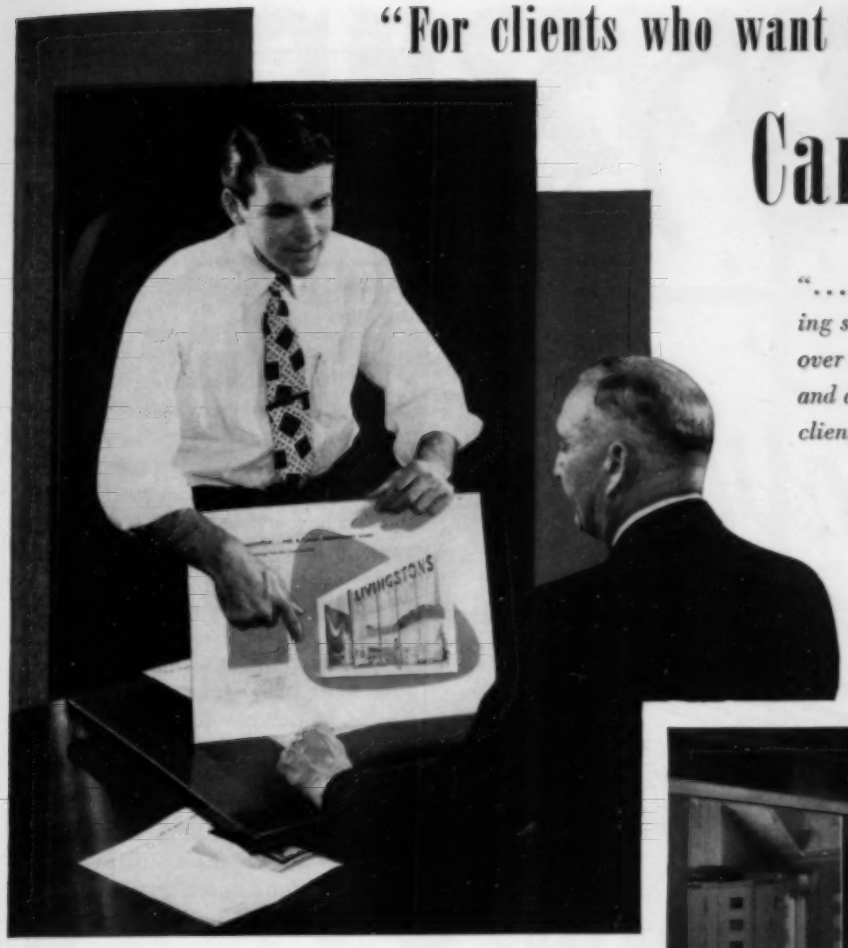
The heaviest volume continued to center in the southern states.

Shorts

• The Producers' Council predicted production of building materials and equipment would break all records during 1950. Except where work stoppages have interfered, output has continued on a high level since spring and early summer. The high rate of production can be

(*Continued on page 180*)

"For clients who want the very best, I specify Carrara Glass!"



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THESE are some of the reasons why leading American architects specify Carrara Glass to perpetuate their creative designs. Here is a product that is finely machined. It has a closely knit structure. It will not check, craze, fade, stain or discolor with age. And it is a *permanent* material, with a rich, flawless, brilliant surface. Precision manufactured, it is free from warpage. Its joints are true and even; there is no lippage. Carrara Glass is easily handled. It can be surface decorated for ornamental purposes. It is available in ten attractive colors and in a wide range of thicknesses.

Why not give your clients the very best in wall materials? Specify Carrara Structural Glass.

Architects: Richard Hawley Cutting Associates, Cleveland, Ohio.

Carrara — *the quality structural glass*

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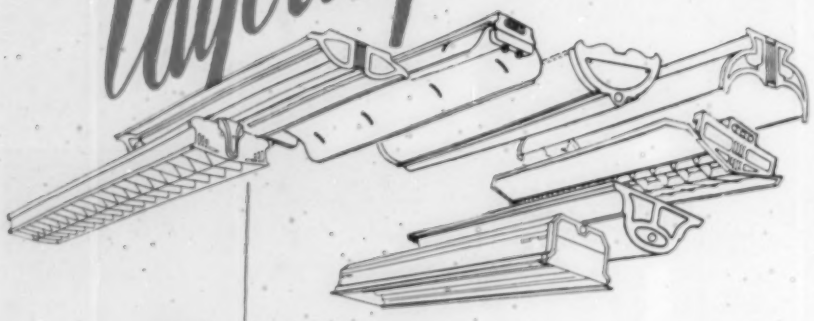
layout possibilities*



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WASHINGTON

(*Continued from page 178*)

maintained until supplies and requirements come into balance this fall, said Charles Mortensen, P.C.'s managing director.

• President Truman signed the bill extending for another five years the period for allocation and expenditure of funds under the Federal Airport program. The authorization now extends to June 30, 1958. The purpose was to permit long-range planning necessary for the design and construction of new airports and expansion of existing airfields. D. W. Rentzel, former Civil Aeronautics Administrator, said the agency has been able to fix the present and ultimate airport requirements for all communities that have or are likely to have scheduled air carrier service by 1955. It now is possible to program intelligently and with a certainty that there will be no economic waste, the available federal-aid funds for airport development, he said.

• The new U. S. Civil Defense plan uncorked by the White House had this to say on engineering services:

Before attack, the engineering services will set up precautionary measures to safeguard water, gas, electricity and food supplies. The service will assist in the shelter program, help to train and equip the rescue forces, and control passive defense measures such as blackout and camouflage. After attack, the engineering service would restore emergency utility service, clear rubble, handle demolition for the fire service and aid the rescue service where heavy equipment is needed.

• George J. Bott, a Marylander, was appointed general counsel of the National Labor Relations Board, succeeding Robert N. Denham, eased out of office by President Truman because of his long-standing conflict with the labor board in administration of the Taft-Hartley Act. Fire from Capitol Hill immediately following the Denham dismissal was inevitable. Said Rep. Gossett (D-Tex.), "Apparently the Taft-Hartley Act is now to be misconstrued and emasculated, or wholly ignored." Bott said he

(*Continued on page 184*)

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62,000	38,000	62,000	27,450	38,000	38,000
15,790	35,608	35,608		14,990	34,808
14,500	14,500	14,500		3,500	1,500
21,240	21,240	21,240		21,240	21,240
400	4,000	400	1,200	4,000	4,000
1,000	1,400	1,000		1,000	1,000
	2,000		23,850	15,000	15,000
2,000	7,000			7,000	7,000
58	**62**	**67**	**DRAVO 26**	**52**	**61**

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- *use less steel*
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- *have stainless steel chambers for longer life*
- *prevent rust and stain conditions in metal storage*
- *bear UL label and AGA approval*
- *require only stack, fuel and power line*
- *are portable and readily moved*
- *provide year 'round ventilation*
- *are ideal for process drying*
- *avoid freeze up worries, leaky traps, valves, etc.*
- *are shipped complete and flame tested*
- *can be installed on floor, wall or roof*
- *can be mounted upside down or horizontally*
- *eliminate ductwork with 150 ft. air throw*

WRITE TODAY FOR BULLETIN HI— 23—8

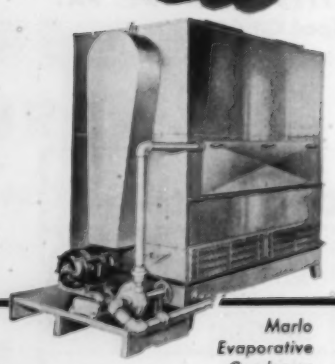
THE RECORD REPORTS

(*Continued from page 180*)

expected to get along fine with the five-man labor tribunal.

• The Associated General Contractors of America reiterated the assurance that the construction industry has ample capacity to carry out all defense construction with maximum speed and efficiency. As a result of the stimulus of the greatest peacetime program in history, forces are available and mobilized for carrying on the present program and for immediate defense work, the governing and advisory boards stated. For World War II the industry completed projects valued at more than $49 billion. . . . Glenway W. Maxon, Dayton, Ohio, 1950 vice president of A.G.C., has been nominated for president in 1951, succeeding Walter L. Couse, Detroit.

Plan to Hide Cooling Towers and Evaporative Condensers Indoors . . . Specify Compact Marlo Units



Marlo Evaporative Condenser

Other Marlo Advantages:

QUIETER OPERATION—Marlo Units feature resilient-mounted motors and pumps, plus mastic-coated interior surfaces that deaden sound.

TOP WATER SAVINGS—Through efficient recycle cooling, Marlo Evaporative Condensers and Cooling Towers save up to 95% of normal cooling water demand.

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ON THE CALENDAR

Nov. 2–4: Annual Convention of the New York State Association of Architects — Hotel Syracuse, Syracuse, N. Y.

Nov. 3–12: 25th Arizona Arts Exhibition, sponsored by the Phoenix Fine Arts Assn. — Arizona State Fair, Phoenix, Ariz.

Nov. 8, 15, 22 and 29, Dec. 6 and 13: Last six of ten conferences, *Forum for Modern Living*, sponsored by the Architectural League of New York. *Nov. 8* — Is Furniture Functional or Decorative; *Nov. 15* — The Architect and Industrial Designer; *Nov. 22* — New Textiles and Wall Coverings; *Nov. 29* — Planting and Modern Design; *Dec. 6* — Lighting and Color in the Home; *Dec. 13* — Widening Horizons. All conferences are scheduled from 8:30 to 10:00 p.m. — The Architectural League, 115 E. 40th St., New York City.

Nov. 9–11: Annual Convention, Louisiana Architects Association, and Annual Meeting, Chapter Officers of the Gulf States District, The American Institute of Architects — New Orleans, La.

Nov. 12–19: 43rd Annual Convention, National Association of Real Estate Boards, and First Annual National Realtors' Exhibition — Municipal Auditorium, Miami Beach, Fla.

Nov. 22–Jan. 28: "Good Design," an exhibition of the best designs in home furnishings for the year 1950 as chosen by the Museum of Modern Art Selection Committee — The Museum of Modern Art, 11 W. 53rd St., New York City, and The Merchandise Mart, Chicago.

Nov. 27–Dec. 2: 19th National Exposition of Power and Mechanical Engineering — Grand Central Palace, New York City.

Dec. 1–2: Great Lakes Regional Seminar, the American Institute of Architects — Oliver Hotel, South Bend, Ind.

Jan. 15–18: Plant Maintenance Show and Conference on plant maintenance techniques — Auditorium, Cleveland.

Jan. 17–Mar. 18: Exhibition of prize-winning designs from Lamp Competition — Museum of Modern Art, 11 W. 53rd St., New York City.

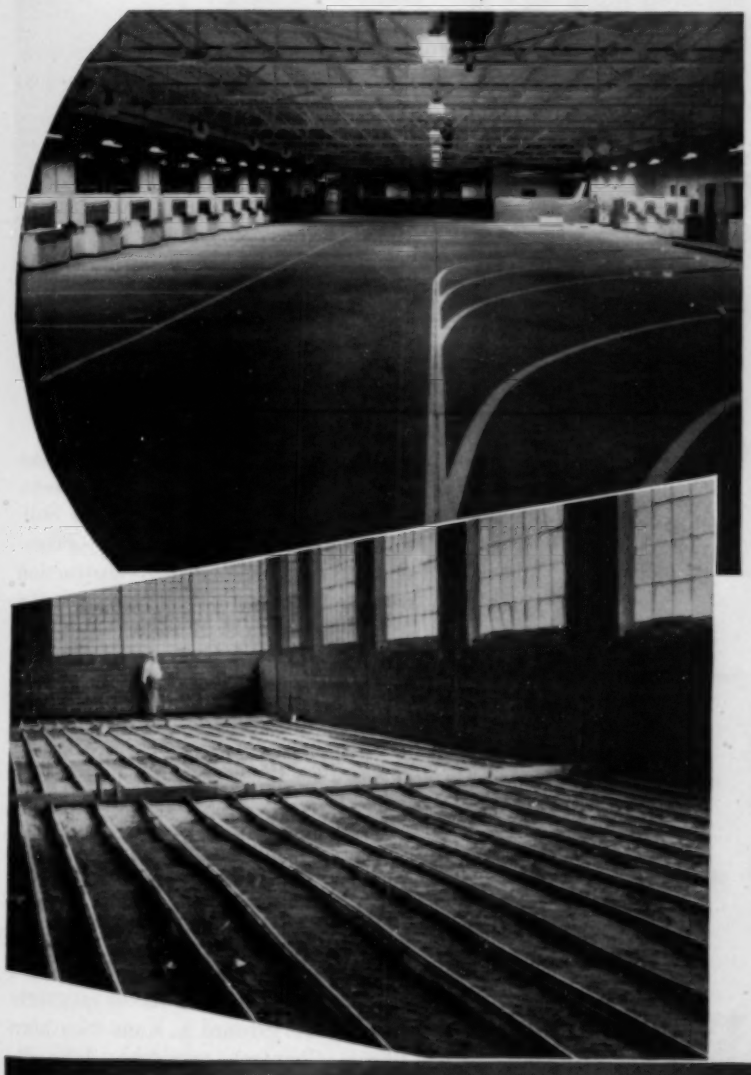
Jan. 18–20: Seventh Annual National Technical Conference, Society of Plastics Engineers, Inc. — Hotel Statler, New York City.

Jan. 21–25: Seventh Annual Convention, National Association of Home Builders — Stevens and Congress hotels, Chicago.

(*Continued on page 186*)

Here's a real "mechanic's garage"

radiant heating with National Steel Pipe assures warm floors . . . maximum comfort . . . at low cost



● The Kuykendall Chevrolet Company garage, in Lubbock, Texas, is skillfully designed with two important things in mind: High efficiency, for low operating cost; and maximum comfort, for higher worker output.

You can't beat radiant heating for attaining such results. It provides warm floors and uniform, comfortable temperatures throughout—ideal for garage work. Radiant heating eliminates above-floor heating units and makes the entire working area available. There are no obstructions, no hot spots, no cold areas or damp floors to handicap operations. These advantages have lead to the increasing use of radiant heating in modern garage construction.

Steel pipe is unequalled for radiant heating installations. It's strong and ductile for easy bending. It's ideal for making welded joints. And steel pipe is so strong that it's hard to damage during installation. Best of all: it's durable in service and economical to use. When you buy National Steel Pipe, you're buying the same reliable steel pipe that has been the standard for conventional heating for more than sixty years.

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THE RECORD REPORTS

(*Continued from page 184*)

OFFICE NOTES

• Harold E. Diamond, A.I.A., announces the opening of his office for the practice of architecture at 150 Bay St., Staten Island 1, N. Y.

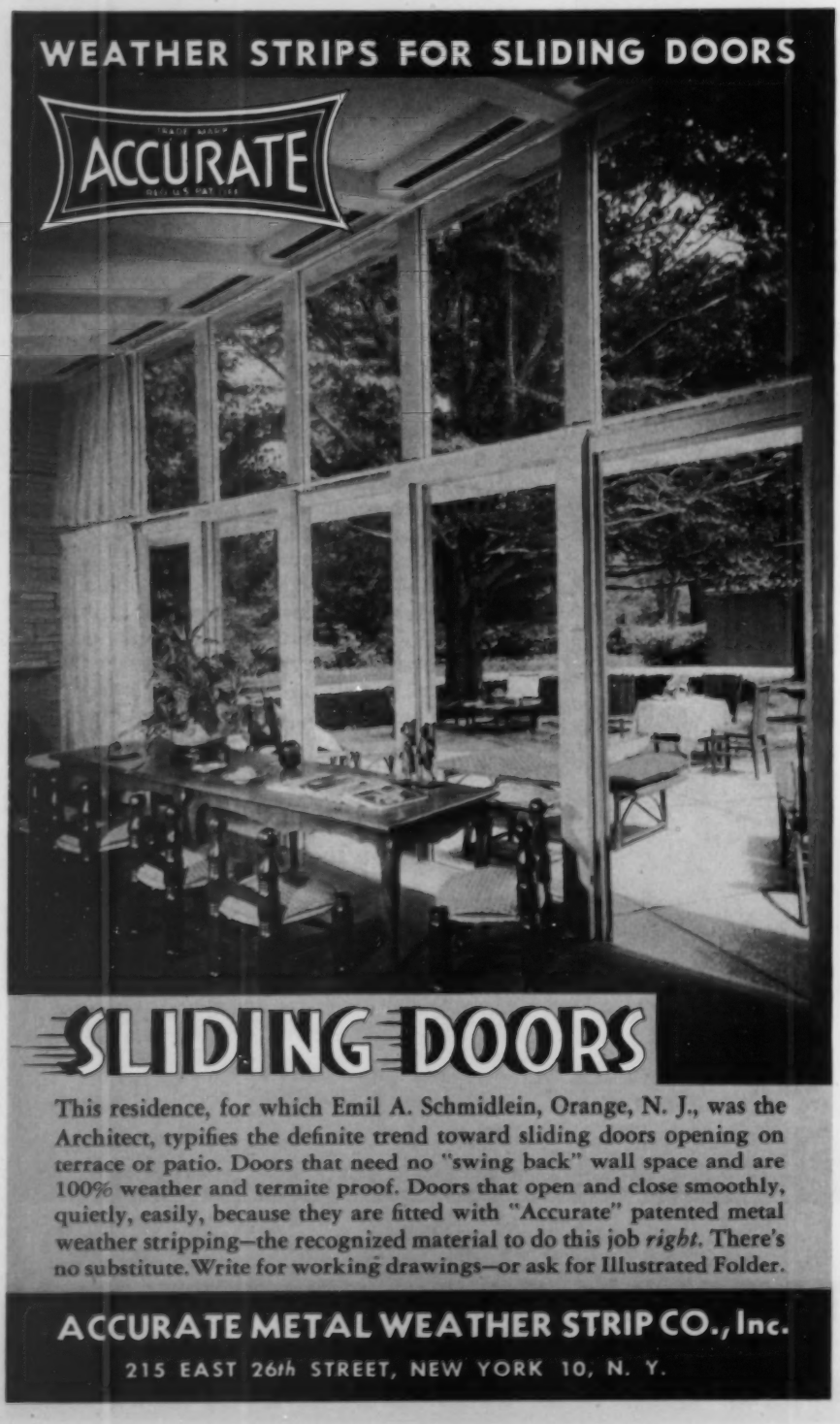
• John W. Harris Associates, Inc., builders with headquarters in New York, have reopened offices in Paris to offer technical assistance and building management services to organizations interested in obtaining American construction experience for their building projects.

• Edgar Tafel, A.I.A., announces the removal of his architectural office to 14 E. 11th St., New York 3, N. Y.

• Stone and Webster Engineering Corp. announces the formation of a Canadian subsidiary, Stone & Webster Canada Ltd. The Canadian company, with present offices at 50 King St. W., Toronto, Ont., has Alfred T. Krook as president. Mr. Krook was formerly district manager of the Stone & Webster Engineering Corp. for the Southwestern area, with headquarters in Houston, Tex. John W. McKee of Toronto is chairman of the Board of Directors.

• Arnold A. Weitzman, Architect and Engineer, has moved his offices to 508 Hammond Bldg., Detroit 26, Mich.

• The office of Robert McKean, Industrial Design, has new headquarters at 32 E. 57th St., New York 22, N. Y.



This residence, for which Emil A. Schmidlein, Orange, N. J., was the Architect, typifies the definite trend toward sliding doors opening on terrace or patio. Doors that need no "swing back" wall space and are 100% weather and termite proof. Doors that open and close smoothly, quietly, easily, because they are fitted with "Accurate" patented metal weather stripping—the recognized material to do this job *right*. There's no substitute. Write for working drawings—or ask for Illustrated Folder.

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ELECTIONS APPOINTMENTS

• Ralph Walker of New York, president of the American Institute of Architects, has been named chairman of the Subcommittee on Construction Mobilization recently organized by construction industry leaders to cooperate with the federal government on national security problems in the field. Another subcommittee, on Construction Credit, is headed by Francis G. Addison Jr. of Washington, president of Security Savings and Commercial Bank. Both groups are subcommittees of the Construction-Civic Development Committee of the Chamber of Commerce of the United States, of which Norman P. Mason of North Chelmsford, Mass., is chairman.

• Officers of the Architects' Association of Illinois elected at the recent quarterly meeting are: Edward A. Kane (Southern Illinois Chapter), president; John R. Fugard Jr. (Chicago Chapter), vice president; Edgar E. Lundeen (Central Illinois Chapter), secretary-treasurer.

• Representing the American Institute of Architects at the International Union of Architects in Paris October 2 were President Ralph Walker and Ernest A. Grunsfeld of Chicago.

• Hugh M. Hughes, president of the Building Trades Employers Association of New York City, has named Perry S. Dewey, third vice president, as chairman of the committee to arrange for the 55th annual meeting of the Building Industry Employers of New York State.

(*Continued on page 188*)

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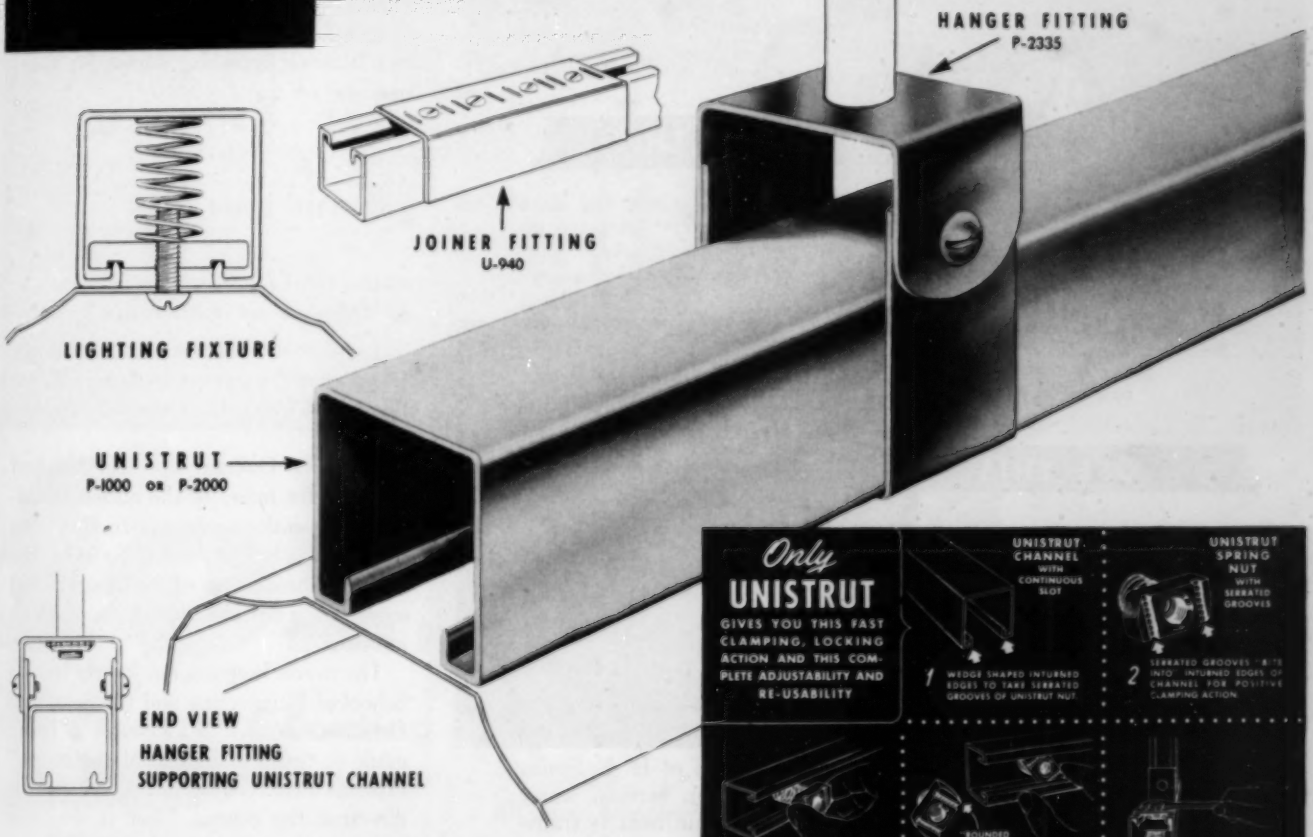

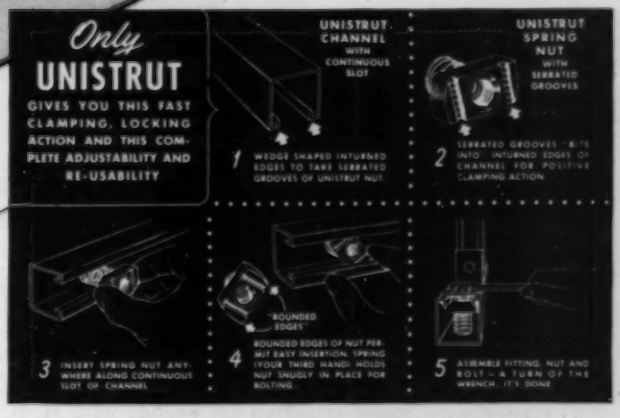
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2 SERRATED GROOVES "BITE INTO" INTURNED EDGES OF CHANNEL FOR POSITIVE CLAMPING ACTION
ROUNDED EDGES
3 INSERT SPRING NUT ANYWHERE ALONG CONTINUOUS SLOT OF CHANNEL
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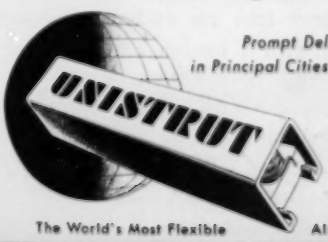

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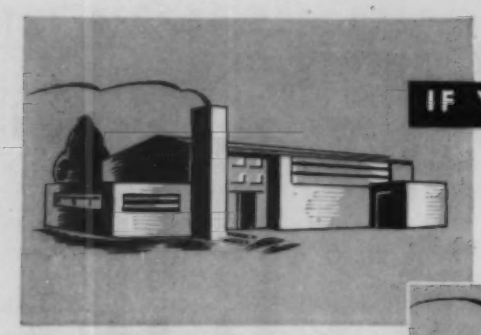
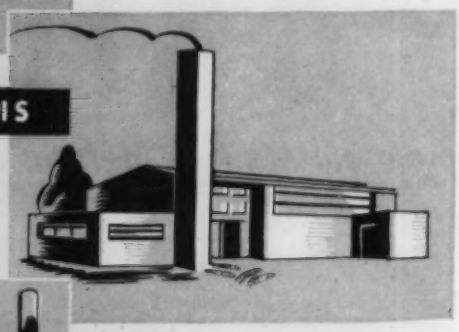


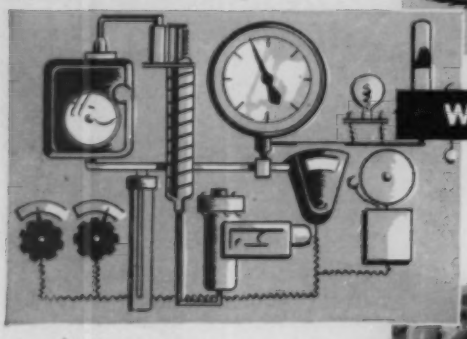
IF YOU WANT THIS

The modern functional school is characterized by trim lines and concise design . . . a low chimney.



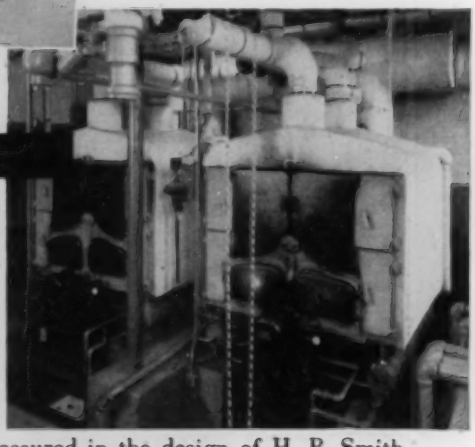
INSTEAD OF THIS

Conventional types of horizontal, return-flue or tube boilers require tall, long-draft chimneys out of keeping with building style.



WITHOUT THIS

Complicated controls and noise of operation are necessary adjuncts when a "package unit" boiler is used with a low chimney.



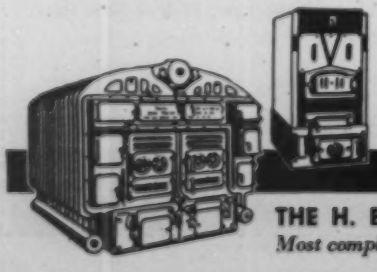
USE THIS

H. B. Smith *low-draft* cast iron boilers meet all heating requirements without tall chimneys or extra controls. This installation is in a Connecticut school.

Minimum draft resistance is assured in the design of H. B. Smith boilers. The hot gases rise between the gray iron vertical water tubes before passing into the side flues. Maximum heat is transferred from the gases to the water in the tubes.

Boilers of the return-flue, or long-fire-tube type, require stronger draft — call for tall chimneys or mechanical draft with elaborate controls . . . none of which are needed with H. B. Smith low-draft boilers.

Result? Low chimneys and freedom from noise, vibration or the danger of draft-control instrument failure. Add space saving, extra long life, economy of operation, low maintenance costs—and sectional construction features that permit the boiler to *grow with the need* — and you see why architects, engineers and contractors recommend H. B. Smith Boilers with full confidence.



H. B. Smith

CAST IRON BOILERS

THE H. B. SMITH CO. INC., WESTFIELD, MASS.

Most complete line in the world of cast iron boilers for heating

THE RECORD REPORTS

(*Continued from page 186*)

The meeting is scheduled Dec. 14–16 in the BTEA clubrooms, 2 Park Ave.

• Paul Bird of New York has been named editor of *Art Digest*, succeeding Peyton Boswell Jr., who died June 23. A former member of the staff of *Art Digest*, Mr. Bird has recently been with the Port of New York Authority.

• Philip J. Cruise has been named chairman of the New York City Housing Authority to fill the vacancy left by the departure of Maj.-Gen. Thomas F. Farrell for active military service. Gerald J. Carey has been named executive director, replacing James W. Gaynor, also on military leave.

AT THE COLLEGES

Industrial Design Course Is Offered at Columbia

A course in industrial design planned for graduate engineers is being offered this fall at Columbia University for the first time.

Francesco Collura, who has designed products for many of the nation's leading corporations, is conducting the course, which is intended to give the student a broad view of the function and scope of industrial design in modern industry.

The course is sponsored jointly by the School of Engineering and the School of General Studies. "No attempt is being made to turn out industrial engineers," explains Prof. George M. Allen, who is directing the course, "but it was felt that engineers today should at least know the fundamentals of this important new field."

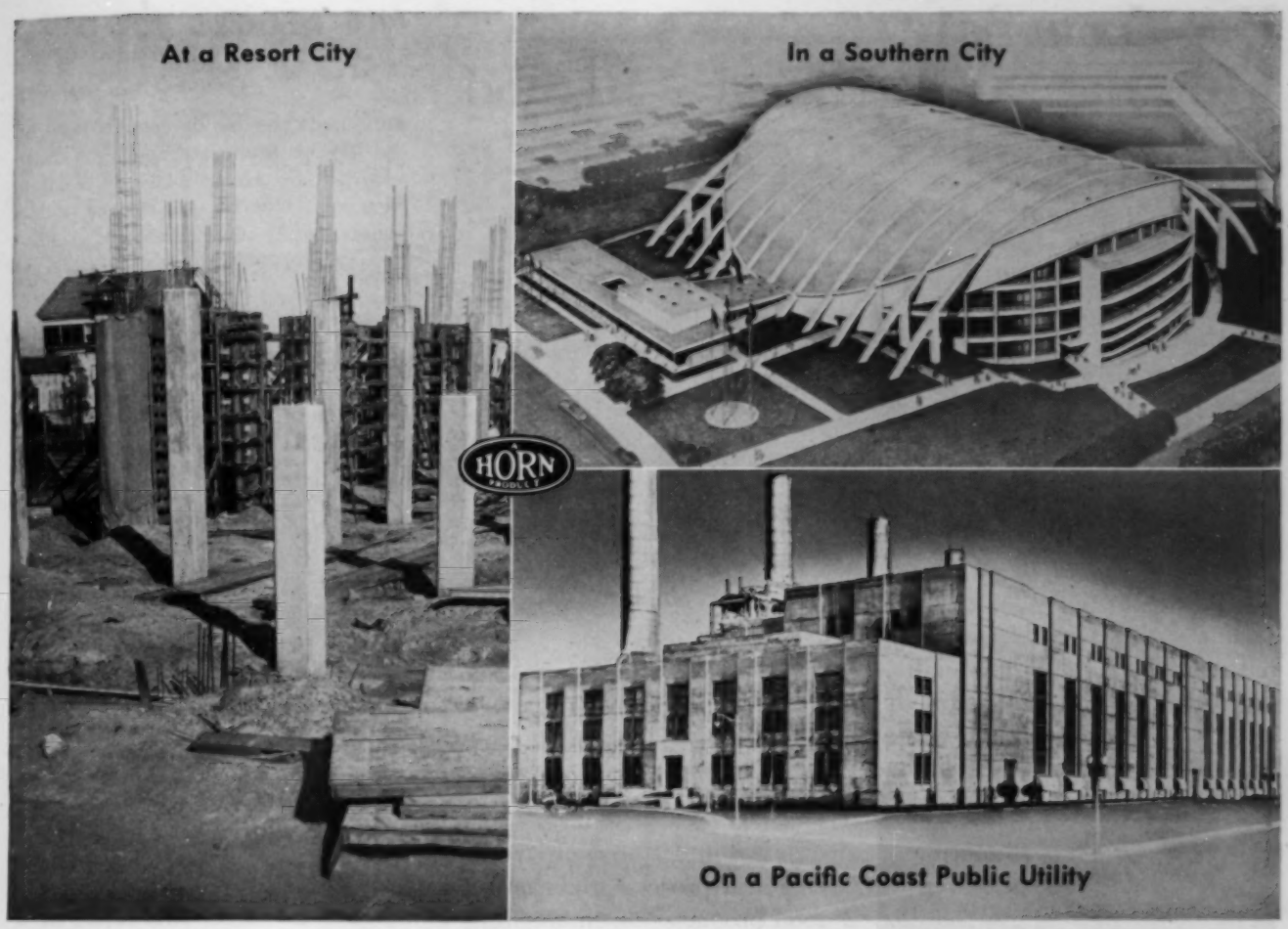
Georgia Tech Initiates Exchange Scholarships

Georgia Institute of Technology has entered into an exchange scholarship plan with a foreign university for the first time in its 66-year history.

Arthur Franklin Beckum Jr., who received his B.S. in Architecture with highest honor last June from Georgia, is the first recipient of the scholarship to Stuttgart Institute of Technology in Germany. He plans to study European architecture.

The one-year Georgia Tech scholar-

(*Continued on page 190*)



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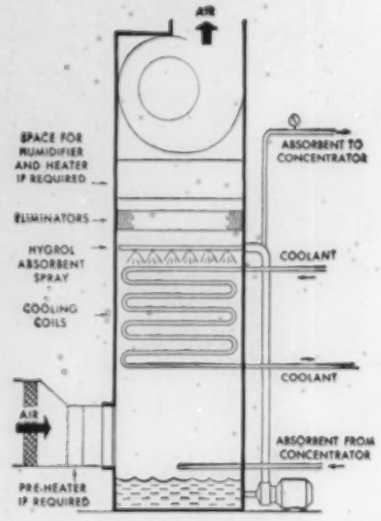
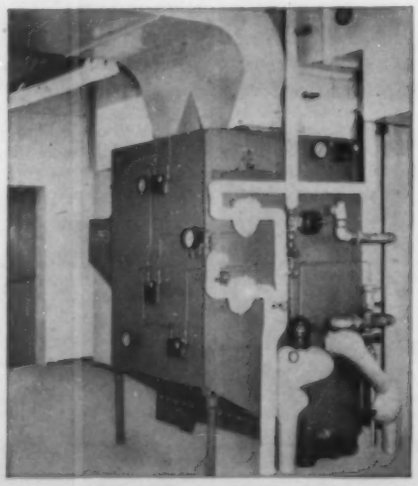
Using "Hygrol" hygienic absorbent liquid, this method gives complete control of temperature and relative humidity. Especially, it is a better way to obtain dry air for drying processes, packaging hygroscopic materials, preventing moisture damage to metals, and obtaining better quality for chemical process products and food products—or in obtaining better results in comfort air conditioning for office or laboratory at lower refrigeration costs.



NIAGARA CONTROLLED HUMIDITY METHOD — FLOW DIAGRAM

Food Packaging under Controlled Humidity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Units provide a range of capacities from 1000 to 20,000 C. F. M. Multiple unit installations are in use successfully. Records of results are available. For further information, write Niagara Blower Co., Dept. AR, 405 Lexington Ave., New York 17, N. Y.

THE RECORD REPORTS

(*Continued from page 188*)

ship, made possible by contributions to the World Student Fund, has been awarded to Hans Ludwig Wagner, chemistry student at Stuttgart. He plans to study physical organic chemistry at Georgia.

Faculty Appointments

• G. Holmes Perkins has been named Dean of the School of Fine Arts of the University of Pennsylvania.

Mr. Perkins, who will begin his work at Pennsylvania next February, has been since 1945 the Charles Dyer Norton professor of regional planning and chairman of the Department of Regional Planning of the Harvard Graduate School of Design.

His appointment as dean fills a vacancy created in June when Dr. George Simpson Koyl retired from that post to devote his entire time to his teaching activities as professor of architecture.

A graduate of Harvard University, where he received both his bachelor of arts and master of architecture degrees, Mr. Perkins taught architecture for a time at the University of Michigan but returned to Harvard in 1930. There he has served successively as instructor, assistant professor and associate professor of architecture in the Harvard Graduate School of Design. From 1942 to 1945 he was associated with the National Housing Agency in the Urban Development Division.

Mr. Perkins is a member of the American Institute of Architects and the American Institute of Planners and is editor of the Journal of the American Institute of Planners. He is the author of a "Comparative Outline of Architectural History" and of numerous articles.

• Additions to the faculty of the School of Architecture and Allied Arts at the University of Oregon for the year 1950–1951 include Edmond McCollin, assistant professor of architecture; Donald Sites, Lionel Chadwick and Jan Smekens, instructors in architecture. All the new staff members are critics in design. Mr. Smekens is on a part-time basis through exchange from the Institute of International Education.

The School has also announced that Prof. Wallace Hayden is on sabbatical leave for the 1950–51 session for study

(*Continued on page 192*)

Welded Design Cuts Structural Cost 32%

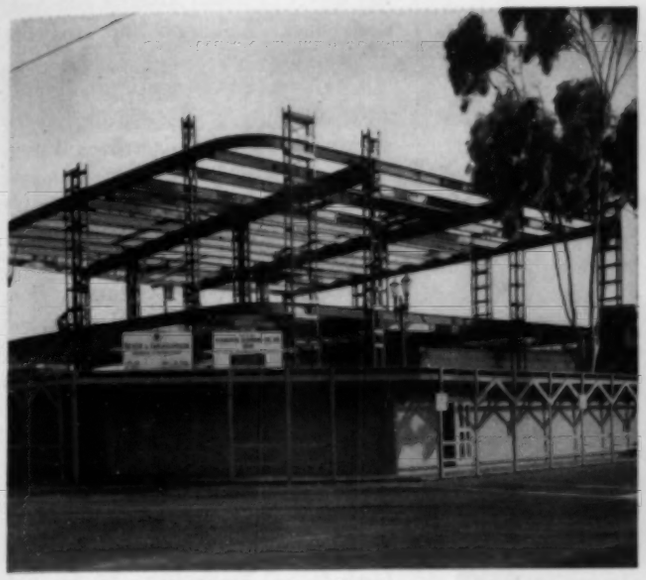

Fig. 1. *All welded (112 ton) framework for the Associated Telephone Company Building, Laguna Beach, California.*

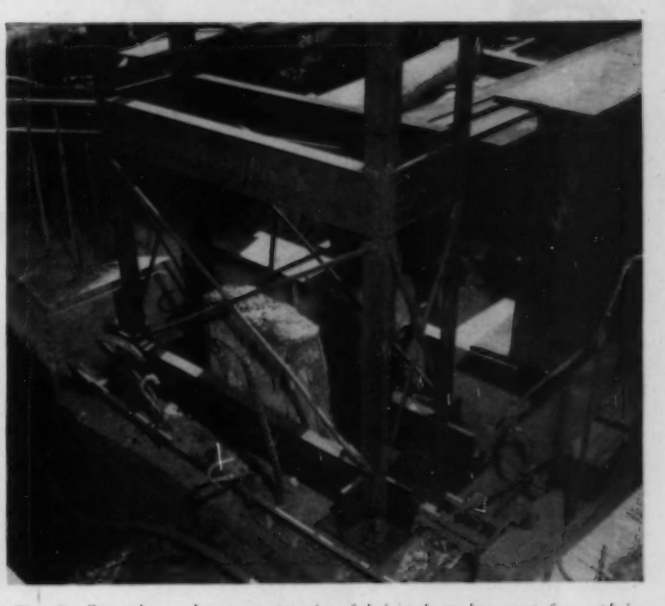

Fig. 2. *Open box column construction fabricated at low cost from plain angles, plate and bars.*

By **Maurice Sasso, Consulting Engineer**
Los Angeles, California

ARC welding provides the engineer new freedom in design for developing structural members impossible by any other method. It enables him to use structural materials more efficiently, to design stronger, yet lighter buildings that can be erected at lower cost.

In the construction of the Associated Telephone Company Building, Laguna Beach, California, open box column design has effected a saving of 32%. The saving of welded construction over riveted design amounts to $7,954 and includes the elimination of 27 tons of structural steel and a reduction in building height of 1′6″.

All open box column members, (Fig. 2) as well as beams and girders, were shop fabricated at low cost with fast, downhand welding methods. Field erection was completed in only 26 hours with a crew of 6 men. Both shop and field welding were done with Lincoln "Fleetweld 5" electrode and "Shield-Arc" welders. Welding also made it possible to erect the addition without disturbing delicate instrument settings in the telephone exchange itself.

Fig. 3. *Arc welding girder-to-column. This is the only weld where a scaffold was used.*

Fig. 4. *Welding beam-to-girder. Full continuity increases resistance to bending and shear.*

Fig. 5. *Beam and girder connection made through open box column permits easy downhand welding.*

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SAFE — because Corruform was developed to provide an extra-tough, secure steel base which maintains structural principles and structural integrity.

GOOD LOOKING — because the pleasing corrugated pattern makes an attractive exposed ceiling. It remains true and level. Corruform is available plain, galvanized or vinyl primed for painting.

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THE RECORD REPORTS

(Continued from page 190)

and travel in South America and Asst. Prof. Jack Wilkinson for study in Europe.

Six graduate assistantships have been made available for 1950–51 to students working for advanced degrees — Warren Holbrook, Joseph Daugherty, Donald Rankin, Howard Hall, Robert Peasley and Mrs. Jane Gehring.

The Ion Lewis Fellow, Everett Franks, has recently returned from travel and study in South America and Prof. David McCosh has returned to the staff after a year's sabbatical leave in Mexico.

• Albert Litvin, materials engineer for the National Bureau of Standards, has been named structural engineer at Armour Research Foundation of Illinois Institute of Technology. In his new position, Mr. Litvin will be doing research in the field of lightweight aggregates and concrete.

• The appointment of Isadore Rosenfield, New York architect and hospital consultant, as a visiting critic in graduate design at the Columbia University School of Architecture has been announced by Dean Leopold Arnaud. The architect will present a problem which involves a hospital with one program and site, but with different climatic conditions.

COMPETITIONS

N.A.H.B. and Building *Sponsor Small House Design Contest*

Prizes totaling $100,000 are offered in a small house design contest jointly sponsored by the National Association of Home Builders and *The Magazine of Building.*

The contest, which closes Dec. 15, is open to draftsmen, designers and students as well as architects. Winners will be announced in January.

The contest is intended to elicit the best possible design for a three-bedroom house with not more than 1000 sq ft of floor space, suitable for a 60 x 100 ft lot, and meeting FHA and VA requirements.

Awards will be made in three categories — national, regional and special. National awards listed are: first — $7500; second — $5000; third — $2500; fourth — $1000; nine honorable mentions —

(Continued on page 194)

HOW to plan distinction at low cost

with the MASONITE HARDBOARD FAMILY

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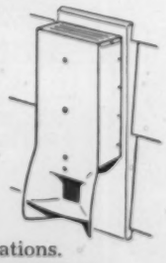

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THE RECORD REPORTS

(*Continued from page 192*)

$500 each. For the seven regions set up by the program there will be first prizes of $750; second prizes of $500; and 15 honorable mentions of $250 each. There will be three series of special awards for the best handling of various phases of house design and use of various materials. These will offer: first — $2500; second — $1500; third — $1000; fourth — $500; 10 honorable mentions — $250 each.

In addition to the $57,000 which has been allocated for national, regional and special awards, it is anticipated that $43,000 in local awards will be offered by many of the nearly 150 local chapters of the N.A.H.B.

Associate sponsors of the contest include the American Gas Association, General Electric Company and Kwikset Locks, Inc. Special award sponsors include the Douglas Fir Plywood Association, Libbey-Owens-Ford Glass Company and Mullins Manufacturing Corporation.

Architect Carl G. Lans is serving as professional adviser to the sponsors of the contest, which has been approved by the American Institute of Architects. Queries should be addressed to Mr. Lans at *Building*, 9 Rockefeller Plaza, New York 20, N. Y.

EERO SAARINEN RECEIVES HIS FATHER'S LAST AWARD

The final honor of a distinguished career came posthumously to Eliel Saarinen at impressive ceremonies arranged by the Detroit Chapter of the American Institute of Architects on September 21 in the auditorium of the Rackham Building in Detroit.

There Eero Saarinen accepted from A.I.A. Secretary Clair W. Ditchy the Gold Medal of the Royal Institute of British Architects, awarded to his father only a few months before the elder Saarinen's death.

The Medal had been entrusted in June to Talmadge C. Hughes, F.A.I.A., executive secretary of the Detroit Chapter, who received it as the Chapter's delegate from R.I.B.A. President Michael T. Waterhouse for presentation to Eliel Saarinen at special ceremonies in Detroit. But Mr. Saarinen died on July 1, before the presentation could be made, and the Royal Institute then asked that the Medal be presented to

(*Continued on page 196*)

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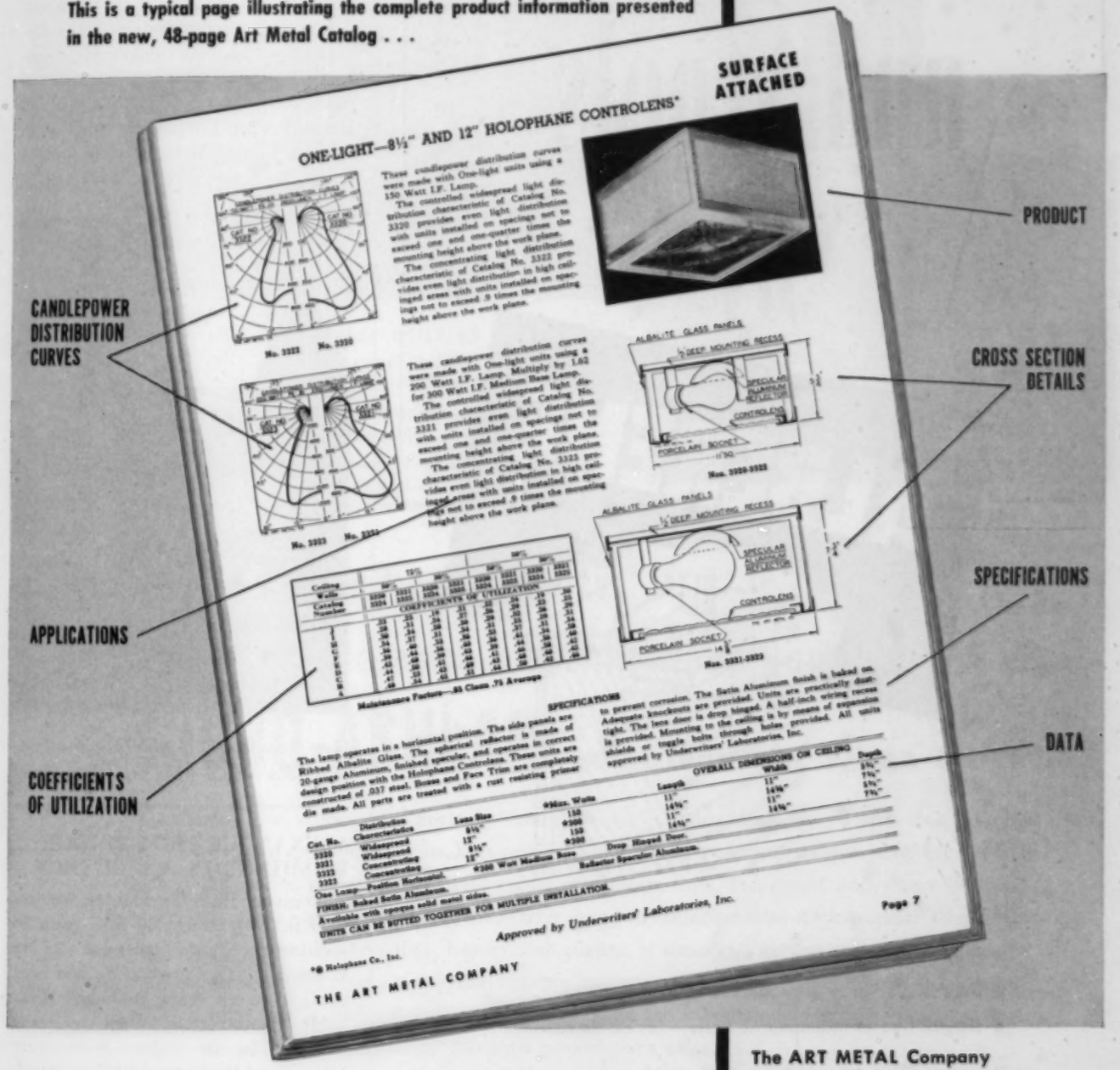

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THE RECORD REPORTS

(*Continued from page 194*)

Eero Saarinen on behalf of his father.

At the Detroit meeting, Mr. Hughes described his mission to London and delivered the Gold Medal to Mr. Ditchy.

Tributes to the Finnish-born architect described by Mr. Ditchy as the most illustrious member the Detroit Chapter ever had were also heard from Prof. Emil Lorch of the University of Michigan and George F. Emery, secretary of the Detroit City Plan Commission. Mr. Saarinen's remarks included a moving account of the memorial services held at Helsinki when his father's ashes were taken to Finland and at the burial place on the Saarinen estate at Hvittrask.

Eero Saarinen (left) receiving his father's Gold Medal from Clair W. Ditchy

ALEXANDER TROWBRIDGE: WASHINGTON ARCHITECT

Alexander Buell Trowbridge, who retired in 1937 after a 40-year career in architecture, died September 27 in Washington, D. C., where he had been living in recent years. His age was 82.

Mr. Trowbridge, a former consulting architect for the Folger Shakespeare Library and the Federal Reserve Board, was senior partner in the architectural firm of Trowbridge and Ackerman in New York from 1906 to 1921. From 1921 to 1934 he was a consulting architect in New York and Washington.

After his graduation from Cornell in 1890, Mr. Trowbridge studied at the Ecole des Beaux Arts in Paris, and then returned to Cornell as dean of the College of Fine Arts from 1897 to 1902.

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THE RECORD REPORTS

CANADA

(*Continued from page 16*)

Labor and Materials Costs Continue Upward Spiraling

The picture, if not black, is at least a somber gray on the Canadian labor and materials front.

During the summer, significant breaks were made in the contractors' "hold-the-line" policy on wage rates. But this has not kept shortages of skilled manpower from developing on every hand. Many workers already have taken jobs in the reopening defense factories. Others have enlisted in the special military force being raised for use by the United Nations.

Construction of Toronto's subsidized Regent Park housing scheme is running half a year behind schedule. Contractors simply are unable to obtain sufficient numbers of plasterers, lathers and bricklayers. Architect J. E. Hoare recently appealed to the Toronto Building Trades' Council for more workmen. He got no commitment.

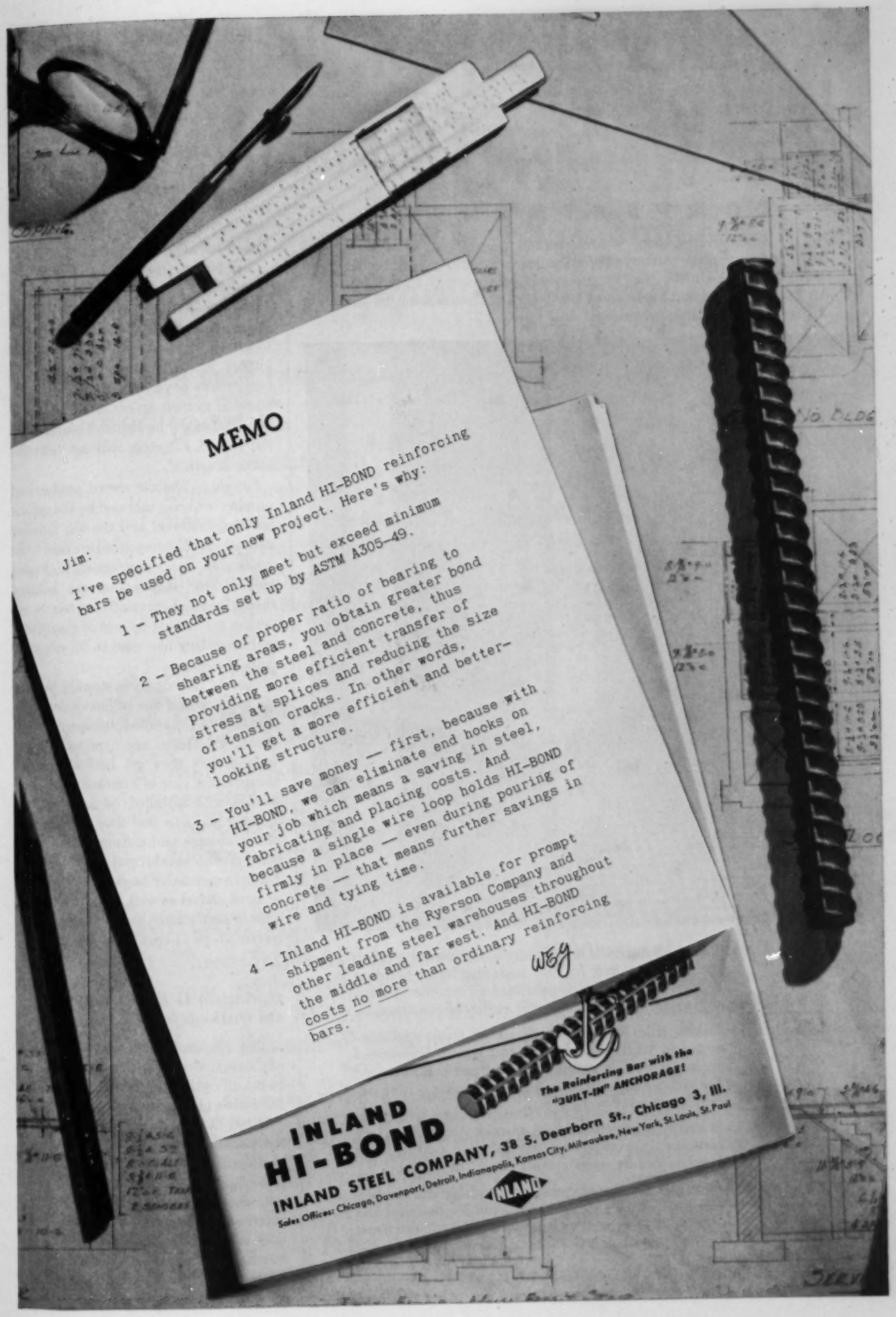
Prices of building materials have been hiking upward at an unprecedented rate ever since the outbreak of hostilities in Korea. One expert says an estimated 15 per cent average advance is conservative. In almost every class of commodity, heavy demand plus boosts in raw materials costs and a touch of inflation is the recipe that has sent prices scurrying to record levels.

Bad enough as this is, goods are becoming scarce enough to extend delivery dates. As a result, some people appear to have concluded that it's faster to steal what they want than to wait for it to arrive through conventional channels. The *Financial Post* reports that thefts of building materials have shown a sharp incline. The materials are either taken from the site at night or are sidetracked somewhere in the handling process.

The Purchasing Agents' Association of Toronto puts it most succinctly. "A sharp price increase has occurred in practically every item in the construction material list, and their availability is at the difficult, if not impossible, stage."

Brick, tile, lumber, cement, steel and wallboard are all in very short supply, with extended delivery in some cases. The nationwide railway strike in

(*Continued on page 202*)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2 - Because of proper ratio of bearing to shearing areas, you obtain greater bond between the steel and concrete, thus providing more efficient transfer of stress at splices and reducing the size of tension cracks. In other words, you'll get a more efficient and better-looking structure.
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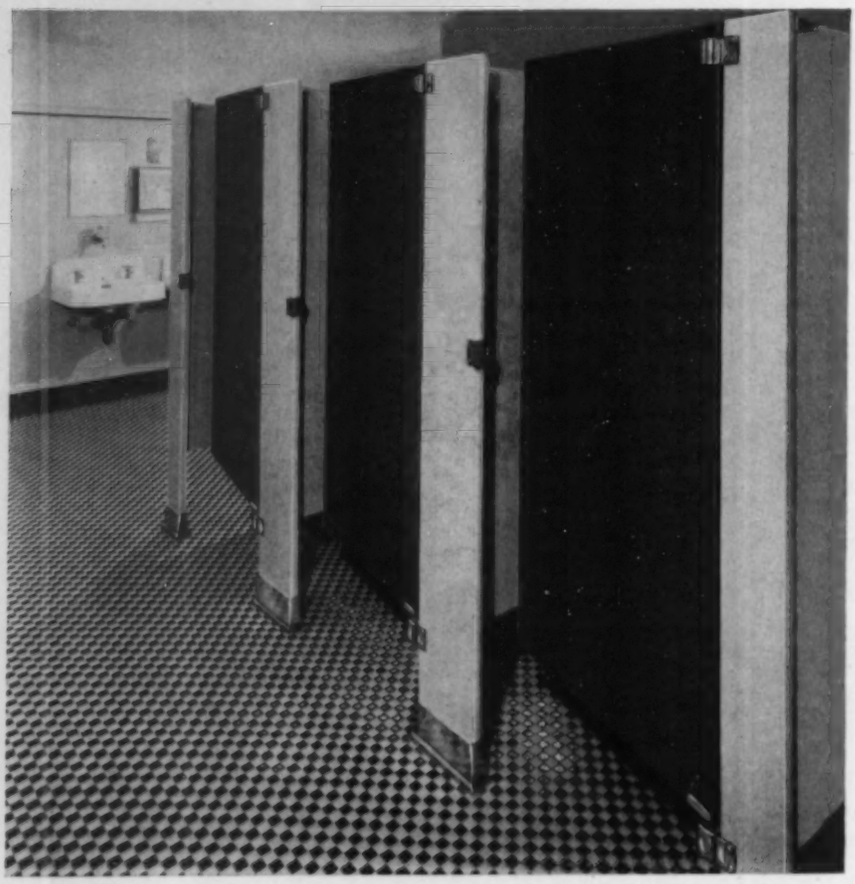

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THE RECORD REPORTS

CANADA

(*Continued from page 200*)

August had the effect of a general slowdown. Many stockpiles were depleted at that time and have not been replenished due to the lack of freight cars.

The picture in brief:

Lumber — Prices, now quoted on a "day-to-day" basis, are on the way up. Higher transportation costs are blamed, together with the world shortage of lumber. U. S. buyers are reported as being ready to pay almost any price. In addition to their orders, a new $25 million one booked by British Columbia for the United Kingdom will not help the home situation.

Cement — Despite record production, supplies are being rationed by the principal manufacturer. And the old, familiar indications of human greed are said to be developing. Some contractors, no longer building for themselves, are holding their quotas for speculative resale. Some dealers are buying up scarce quantities, and importing like mad in an effort to make a killing.

Steel — The supply is steadily becoming more critical due to heavy domestic demand and curtailed shipments from the U. S. Things are expected to get worse before they get better. One instance is the case of hundreds of homeowners who installed oil heating this summer and now find they're unable to obtain storage tanks. Another is the return of the conditional sale of nails. Unless a purchaser buys an alarm clock or snow shovel as well, he gets no nails. This is particularly hard to take after a recent 40- to 45-cent boost per cwt.

Optimism Is Expressed On Outlook for Housing

The National Lumbermen's Council of Canada, meeting in Windsor, recently heard an optimistic forecast concerning the future of housing in Canada.

W. F. Lougheed, economic adviser to the Canadian Bank of Commerce, said that barring war or transformation of Canada into a garrison state, "one cannot see any check to house building activities for many years to come. Not only is there a substantial demand for housing, but also the encouragement of house building will be a part of the

(*Continued on page 204*)

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SCHOOL No. 1

School contains sixteen (16) rooms and a gymnasium and houses three hundred and twenty (320) pupils. One stoker using one hundred and ten (110) tons of rice coal per year requires twenty two (22) man hours for a complete heating season. The building is cared for by a single custodian who performs all other janitorial duties as well.

SCHOOL No. 2

This is a seventeen (17) room and gymnasium unit housing two hundred and ninety two (292) pupils. One stoker using one hundred and fifty (150) tons of #1 Buckwheat per year requires ½ man hour of labor every two and one half (2½) days during the heating season. A single custodian performs all other janitorial duties.

SCHOOL No. 3

Three (3) stokers using five hundred (500) tons of rice per year requires two and one half (2½) man hours of labor per day for boiler room attention. A single custodian performs this and all other duties in the school.

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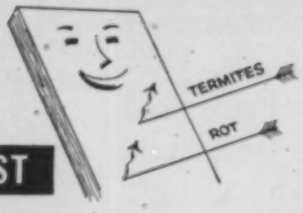
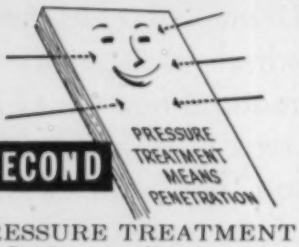
All architects should know these facts about pressure-treated lumber



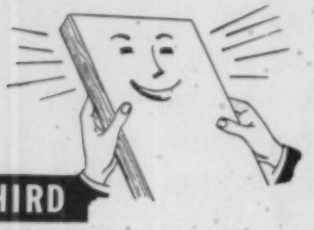
FIRST

PROTECTION—Treating of lumber preserves it—just as alloys preserve metals. The purpose is to protect lumber against costly rot and termite damage.



SECOND

PRESSURE TREATMENT vs. Surface Application—Authorities say that pressure treatment provides the only *sure, lasting* protection to lumber.



THIRD

OTHER QUALITIES TO LOOK FOR—For greatest usefulness, preservatives also should be *clean, odorless, paintable, non-leaching* and *non-corrosive.*

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FOURTH

WOLMANIZED Pressure-Treated Lumber combines *all* these requirements—*lasts 3 to 5 times longer* than untreated wood, because it's treated under 150 lbs. pressure per square inch. Protection is deep in the wood fibers. It's clean, odorless, paintable, non-leaching, non-corrosive. Wolmanized Pressure-Treated Lumber has been proved in use for over 25 years. It will prove its value to you, too.

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THE RECORD REPORTS

CANADA

(*Continued from page 202*)

anti-depression activity of any government."

Mr. Lougheed's opinion is reassuring in the face of mounting construction costs. The latter seem to be inevitable with higher taxes, defense demands for material, and long-term labor contracts with projected wage increases.

So far, despite international tension, lending institutions advise that there has been no change in mortgage policy and they do not admit that any immediate change is contemplated. It is true that some institutions are not accepting applications on certain types of house at the present time, but this fact is attributed to the great expansion that has taken place in their mortgage portfolios, putting them in a position to be more selective than formerly.

Likewise, it is claimed that no change has been made in the lending policy of Central Mortgage & Housing Corporation, and no action comparable to the restriction of housing credit by the U. S. government is scheduled now. However, the federal shelter agency is not recognizing current labor and materials costs in establishing its appraised values. This may result in some curtailment of

(*Continued on page 206*)

Graham Warrington photography

Above: Guardian Angel Church, Vancouver. Architects: Gardiner & Thornton

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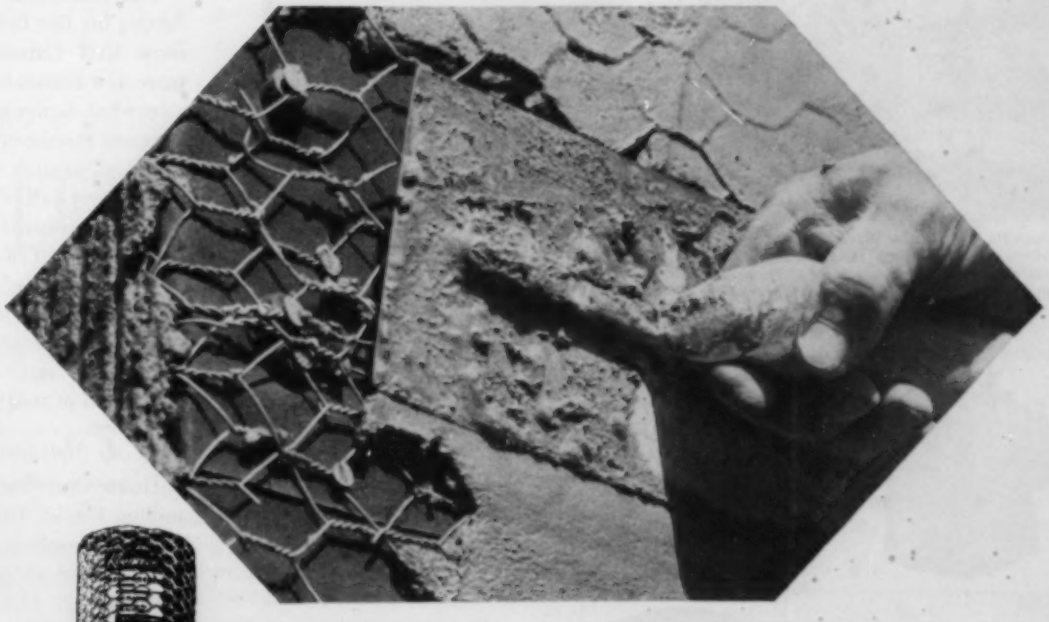
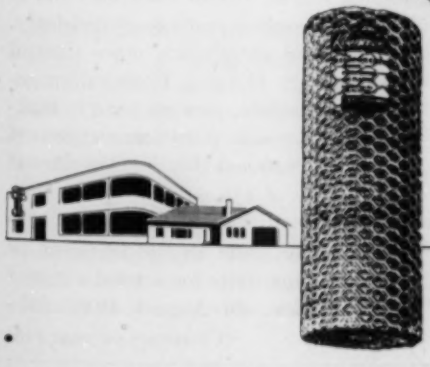
There's a challenge, that many architects enjoy, in designing homes that "look like more than they cost." And the Keystone System of Stucco Application is one sure way of meeting the challenge successfully *in any price bracket.* The structural versatility and durability made possible by the Keystone System of Stucco Application set new standards for exterior finishes. For interiors, too, Keymesh offers design and construction advantages worthy of your consideration. Let us send you the booklet, "Specifications for Beautiful, Durable Stucco." Write Keystone Steel & Wire Company, Peoria 7, Illinois.





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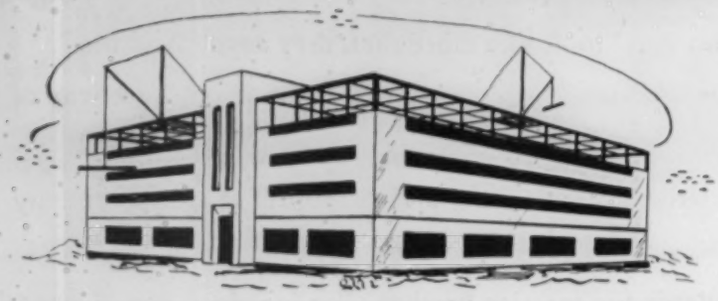
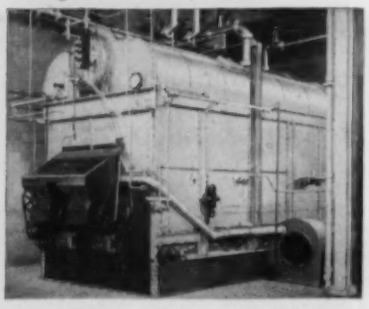
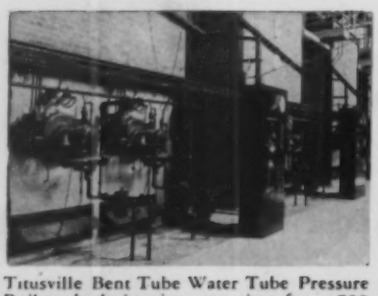


Titusville Scotch Marine High Pressure Boilers built with heating surfaces of 97 to 2993 square feet.

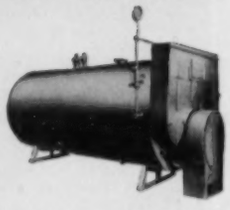
Titusville Ticotherm Steam Generators built in sizes ranging from 1000 square feet heating surface, and upwards.





Titusville Bent Tube Water Tube Pressure Boilers built in sizes ranging from 729 square feet heating surface to 8316 square feet heating surface, in required pressures.

Titusville Scotch Marine Heating Boilers built in 19 sizes from 129 square feet to 2500 square feet heating surface, with 2190 to 42,500 square feet of steam radiation.



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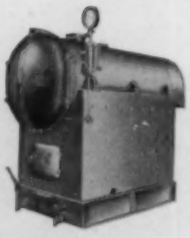
Three Pass Compact Type Welded Heating Boilers built in 19 sizes, from 129 to 2500 square feet heating surface, with 2190 to 42,500 square feet of steam radiation.



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THE RECORD REPORTS

CANADA

(*Continued from page 204*)

building under the National Housing Act, but it is doubtful if it will have any appreciable effect in curbing rising costs when the whole economy is on the upswing.

In some quarters, notably those related to labor and social welfare, it is charged that the present C.M.H.C. policy discriminates against low income groups, those people who have money to meet monthly mortgage payments, but lack savings to make the initial down payment, and cannot acquire savings because of the high cost of living. Toronto's City Welfare Committee has gone so far as to call on the Ontario government to reinstate its second mortgage financing program for National Housing Act houses. There has been no action yet and it is doubtful if the province, after giving up its prerogatives in this field when the N.H.A. was revised last fall, is disposed to reenter the mortgage business.

Housing Volume

The Dominion Bureau of Statistics figures for the first six months of 1950 show that Canada has been starting more new houses but finishing them at a somewhat slower rate.

Starts numbered 42,149 up till July 1 this year, against 40,199 last year. During the first half of 1950, 35,968 dwelling units were finished compared with 39,726 in the first half of 1949.

At the end of the half-year, some 63,634 dwelling units were in various stages of construction. This is more than the 56,787 units estimated to be uncompleted at midyear in 1949.

N.H.A. Mortgages

House building awards tallied $7.4 million less in August than they did in the same month a year ago. Surprisingly, though, and particularly since Central Mortgage & Housing Corporation refuses to recognize current costs in making its appraisals, joint loans approved under the National Housing Act showed an increase of $16 million over August 1949. During the month, 3626 loans were approved to assist in the financing of 3932 dwelling units for a total value of $28.1 million. In August 1949, 2014

(*Continued on page 210*)

How long would it take your draftsmen to letter these notes by hand?

GENERAL NOTES

REMOVAL OF EXISTING BRIDGE:- EXISTING SUPERSTRUCTURES SHALL BE REMOVED AND PILED AT THE SITE FOR DISPOSAL BY THE STATE.
EXISTING STONE ABUTMENTS SHALL BE REMOVED TO THE ELEVATIONS SHOWN ON THE PLANS. EXISTING STONE PIERS AND TIMBER PILE BENT SHALL BE REMOVED TO STREAM BED. THE MATERIAL REMOVED SHALL BE PILED AT THE SITE FOR DISPOSAL BY THE STATE.

WELDING:- ALL WELDING SHALL BE CLASS "A".

PILING:- PILING SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 20 TONS. ALL PILES SHALL HAVE STEEL POINTS. MINIMUM PILE PENETRATION SHALL BE 20'0" BELOW BOTTOM OF FOOTING.

VIBRATION:- ALL CONCRETE SHALL BE MECHANICALLY VIBRATED.

EXPOSED EDGES:- CHAMFER ALL EXPOSED EDGES OF CONCRETE $\frac{3}{4}$" UNLESS OTHERWISE DETAILED.

RE-USED STEEL FOR TRUSS SHALL BE HAULED BY THE CONTRACTOR FROM MCKINLEY AVE. GARAGE OF DEPT. OF HIGHWAYS AT COLUMBUS (WHERE IT WILL BE STORED AFTER COMPLETION OF ITS USE AT BR.NO.MA-40-161 OVER BIG DARBY CREEK, S.H.1, SEC. A.J, MADISON COUNTY) AND SHALL BE ERECTED AT THIS COSHOCTON COUNTY SITE, OR THE CONTRACTOR MAY BE REQUIRED TO HAUL THIS STEEL FROM THE BIG DARBY SITE TO THE COSHOCTON CO. SITE. THE BID PRICE FOR "HAULING RE-USED STRUCTURAL STEEL" SHALL BE CONSIDERED AS APPLYING TO HAULING FROM EITHER OF THESE SITES AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL CONSIST OF HAULING AND UNLOADING IN CASE OF EITHER SITE AND ALSO LOADING IN CASE OF THE MCKINLEY AVE. SITE: IN CASE OF HAULING FROM THE BIG DARBY SITE THE CONTRACTOR SHALL BE DONE BY THE BIG DARBY CONTRACTOR UNDER HIS PRESENT CONTRACT AND THE CONTRACTOR FOR THE COSHOCTON CO. PROJECT SHALL HAVE ADEQUATE VEHICLES READY AT THE BIG DARBY SITE WHEN THE STEEL IS READY FOR LOADING.

PAINTING:- PAINT FOR SHOP COAT ON NEW STEEL AND PAINT REQUIRED FOR SPOT PAINTING ON RE-USED STRUCTURAL STEEL SHALL MEET THE PROVISIONS OF SEC. M-9.20 OR SEC. M-9.21. FIELD PAINT FOR BOTH THE NEW AND REERECTED STRUCTURAL STEEL SHALL BE TWO COATS OF EITHER ALUMINUM PAINT, SEC.M-9.12 OR WHITE PAINT, SEC.M-9.6, TINTED TO MATCH THE COLOR OF THE CONCRETE.

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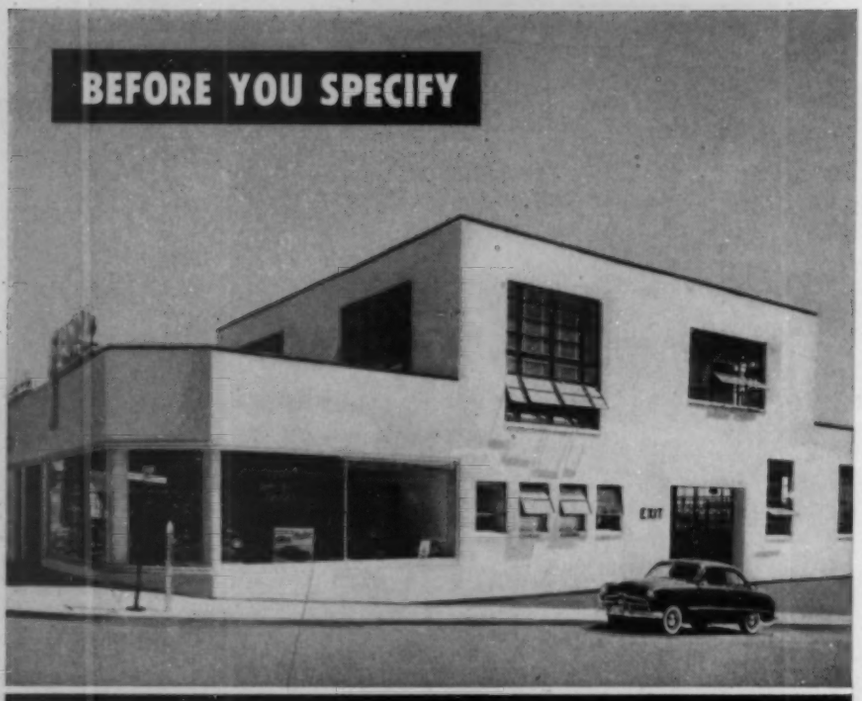

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STUCCO is *the economical way* to lift a commercial building out of the drab and commonplace. It is a beautiful finish ... in sparkling white or color. And it is practical. It simplifies design and construction problems. Original and upkeep costs are low.

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To get the full beauty of stucco along with its inherent durability, ATLAS WHITE CEMENTS are being specified more and more. Because they are true white cements, they enhance delicate pigment-based color tones and values.

ATLAS WHITE CEMENTS comply with ASTM and Federal Specifications for portland cement and are available in three types: Regular, Waterproofed and Duraplastic* air-entraining. Atlas White Duraplastic Cement gives increased plasticity for easier application and results in an even more durable stucco. Yet it costs no more.

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THE RECORD REPORTS

CANADA

(*Continued from page 206*)

joint loans were approved for 2278 units amounting to $12.3 million.

Total joint loans from January to the end of August this year, amount to more than $188 million, an increase of $110 million over the same eight-month period last year.

Property Values

A national survey of the several hundred members of the Canadian Association of Real Estate Boards posed the question: is the saturation point for housing yet in sight? The answer was a categorical "no" from most reporting sections. The general outlook for real estate sales in 1950–51 is unchanged from 1949–50. Demand is especially strong in Ontario, Quebec and the Maritimes. In British Columbia it is strong in Vancouver, steady to slightly declining elsewhere. The Prairie Provinces show soft spots developing in some sections, with others remaining strong.

The realtors say that prices of new residential property show a mixed pattern, but generally speaking, they are higher than ever before. Prices are staging a comeback in many cases of older property.

August Contract Awards Continue to Show Rise

Contracts awarded during August soared to $144.5 million, $53.7 million ahead of last August's $90.6 million, according to MacLean Building Reports. With this month's increase, 1950's construction effort shot even farther ahead of the record established in 1949. In the first eight months of this year, $881.6 millions worth of contracts have been awarded, an increase of almost 25 per cent over $708.8 for the same period last year.

Toronto Development Plan Gets Provincial Approval

The master plan designed to control Toronto's development for the next 30 years has been approved by the Ontario Department of Planning and Development.

This action comes nearly a year after the Toronto Planning Board's proposals were first made public, and paves the

(*Continued on page 212*)

This

Low-Brightness *Installation means High-Level Seeing Comfort*

AT THE HARTFORD CONNECTICUT TRUST COMPANY

Seeing comfort is high in this Hartford, Connecticut bank. One reason, of course, being the high intensity level . . . an average of 60 footcandles initially. Yet brightness levels are exceptionally low both lengthwise and crosswise. The result is a well-lighted working area that keeps the seeing and working efficiency of employees high . . . that gives a light, cheerful atmosphere, attractive to customers.

Whenever you have a lighting problem — unusual or standard — call on your nearest Litecontrol representative. He'll be glad to assist you in every way.

HARTFORD CONNECTICUT TRUST COMPANY, Hartford, Connecticut

Architect:
Kilan & O'Connor, Hartford.

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Lighting Equipment:
Litecontrol No. 5938 recessed. Slimline fixtures with Holophane No. 9015 CONTROLENS.*

Average Initial Intensity:
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LITECONTROL *Fixtures*

KEEP UPKEEP DOWN

CANADA (*Cont. from page 210*)

way for gradual implementation of a scheme that affects every aspect of the city's physical structure.

In preparation for three years, the plan calls for the spending of some $179 million on traffic arteries, public squares, redevelopment of blighted areas, extensions to water and sewage facilities, erection of health centers and homes for the aged, new civic buildings and park improvements. Grants from the provincial and federal governments are expected to reduce the net cost to the city to about $145 million.

Left: Upholstery factory for Toronto will have steel frame construction exposed on outside, laminated wood floors sprinklered throughout. Architect is Murray Sklar

James P. Maher, Planning Board chairman, commenting on the Province's approval, points out that a framework has been established within which Toronto can develop on an orderly basis.

"It is the first time in the city's history," he said, "that approval has been obtained for such a comprehensive plan."

City Council must now take two essential steps. The first: to adopt an up-to-date zoning bylaw. The second: to set up a system of priorities that will enable the various phases of the work to be carried out according to the urgency of the need and the ability of taxpayers to meet the cost.

Report Foresees Shortage Of Architects, Engineers

Canada faces a serious shortage of architects and engineers, according to the latest report of the Technical Services Council on the employment situation.

During the 22 years the Council has been in operation, the number of architects and engineers per capita has increased tremendously.

"Nevertheless," the report states, "industry has expanded so greatly and our civilization has become so dependent on technology that the large (university) graduating classes have been absorbed."

Demand has been accelerating since the Korean crisis. Openings listed with the Council in August showed a hike of nearly 60 per cent over the same month last year.

B.C. Architects Publicize Activities of Profession

The Architectural Institute of British Columbia is one of Canada's most active associations. Last fall, it set up a committee, under the chairmanship of Robert R. McKee, to launch a combined advertising and public relations program. Considerable progress is reported on the year's operations.

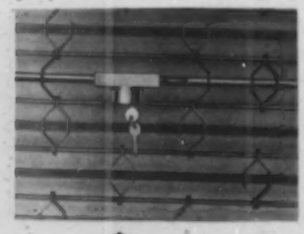
In advertising, both newspapers and direct mail were used. The ads were ap-

(*Continued on page 214*)

New Safety
plus air conditioning
with MECCO Grilles

A NEW MECCO PRODUCT . . . MECCO Rolling Grilles are engineered and built with the experience of scores of years in the fabrication of all types of doors for all types of buildings and projects. A combination of beauty and strength makes these new MECCO Grilles ideal for any application requiring locked off areas without disturbing light and air flow.

WHERE TO SPECIFY . . . For restricted areas in factories, warehouses, public buildings, schools, hospitals and other institutions . . . for store fronts and sections of stores . . . for recreational centers, stadiums, bowling alleys, race tracks and playgrounds . . . for entrances to parks, estates and prohibited areas both governmental and private.



SEND FOR FREE ESTIMATE OF YOUR REQUIREMENTS for new MECCO Rolling Grilles are available in sizes and types to meet your individual requirements. Complete data is available to you without obligation of any kind . . . write today.

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ALL TYPES ROLLING DOORS
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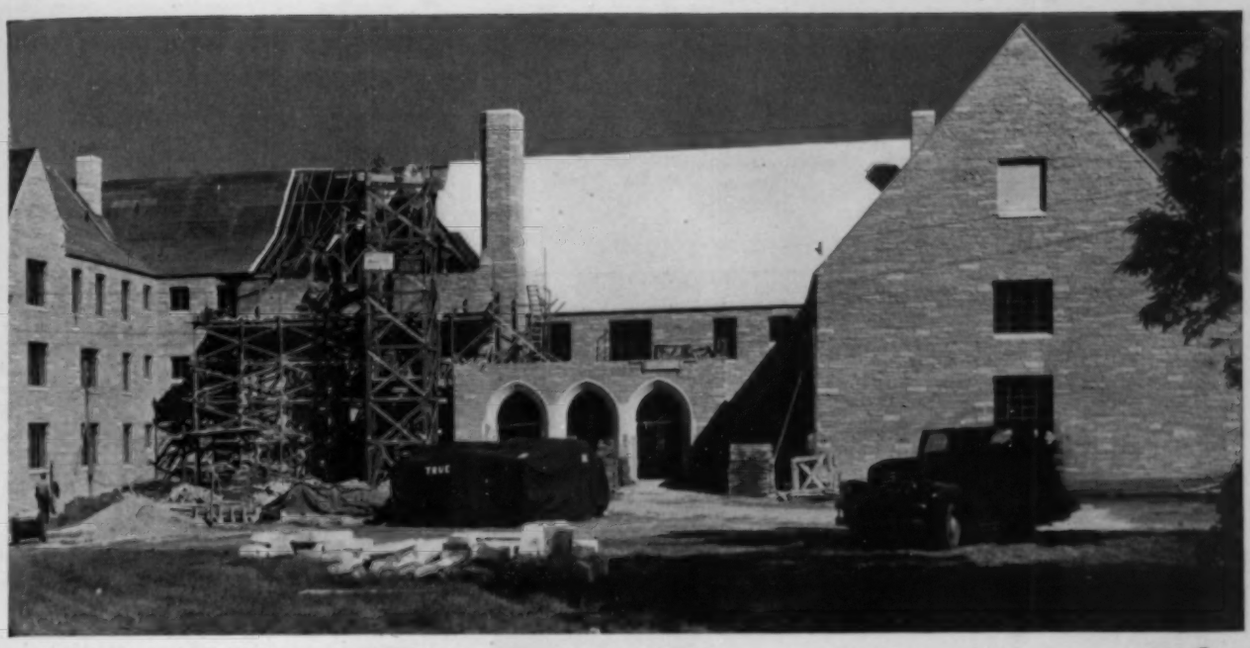

Photograph shows application of Kaylo Roof Tile to a new dormitory of the University of Tulsa, Tulsa, Oklahoma. Architect—Atkinson & Murray. Contractor—Al Ward Construction Co.

Resists FIRE... ROT... HEAT LOSS... WATER DAMAGE

OTHER KAYLO BUILDING PRODUCTS

Kaylo Firedoors, with their incombustible core, have an Underwriters' rating for Class B and C openings. Handsome in appearance, they provide fire protection and insulating value—will not warp, swell or shrink.

Kaylo Laminated Panels provide finished walls which are lightweight, strong and easy to erect. They are available with surfaces of: cement-asbestos, wood veneer, metal, plastics and other materials.

Kaylo Insulating Roof Tile form a long-lasting roof deck, over which standard roofing materials are applied. Compare these advantages:

Incombustibility of Kaylo Tile assures protection against fire;

Insulation Value eliminates the need for additional insulating materials;

Structural Strength is more than adequate for typical roof loads;

Inorganic Composition insures rot-resistance—moisture does not damage Kaylo Tile;

Light Weight permits the use of lighter supporting structural members;

Easy Application expedites the completion of flat or pitched roof decks.

When planning new school buildings or to modernize existing units, look into the outstanding advantages offered by Kaylo Insulating Roof Tile.

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OWENS-ILLINOIS GLASS COMPANY

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NAME.....

ADDRESS.....

CITY.....STATE.....

CANADA (*Cont. from page 212*)

proximately six by nine in. in size and ran in the three Vancouver daily papers. They were positioned on the financial page to catch the eyes of the city's business men. Slick proofs were then mailed to 1000 top executives and decision-makers in Vancouver.

To give the Institute members a chance to meet the press, a cocktail party was held at the Vancouver Club. The publishers, managing editors, business editors, and advertising managers of the three dailies, together with representatives of the wire services and trade journals, were invited.

Arrangements have also been made for architects to appear on forum-type radio shows and opportunities are being sought for them to speak to service clubs, boards of trade and other groups.

Building Industry Starts Plans for Civilian Defense

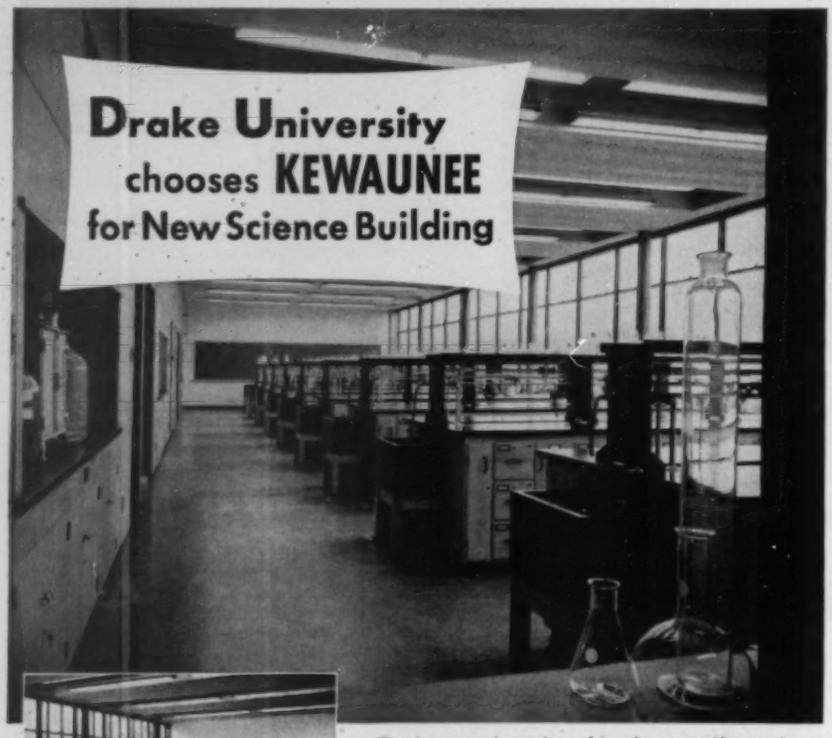
Establishment of a Liaison Committee on Civil Defense has been announced by Robert Drummond, president of the Canadian Construction Association.

"The C.C.A. has long pledged its unrestricted cooperation to the government on all defense matters," said Mr. Drummond, "and after consultation with Major-General Worthington, coordinator of civil defense, the Liaison Committee has asked its affiliated Builders' Exchanges throughout Canada to set up local committees to deal with the construction phases."

Though the nation's civil defense program is still largely in the planning stage, Mr. Drummond declares it is obvious that the construction industry must be prepared to play a leading role in mitigating the effects of an attack. As examples, he cited debris clearance and demolition work, restoration of public utilities and lines of communication, rescue of victims trapped by falling buildings, and shelter erection.

The chairman of the Liaison Committee is Col. G. E. Crain, Ottawa general contractor, who reports that already 15 Builders' Exchanges in as many cities have responded to the C.C.A. appeal.

(*Continued on page 216*)



Three of the many science rooms at Drake University, equipped by Kewaunee. TOP—General Chemistry Laboratory; CENTER—Pharmacology and Physiology Laboratory; BOTTOM — Physical Science Laboratory.

Design, engineering, function, quality, value. All entered into the selection of equipment for the new Science Building at Drake University. And *on every count,* Kewaunee Laboratory Equipment stood at the head of the class!

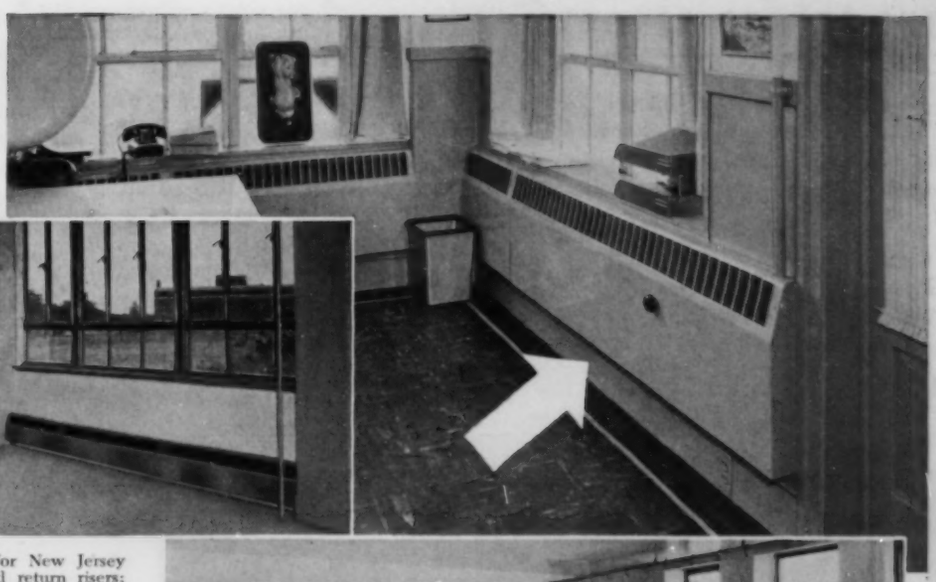
Kewaunee design and engineering conform to the needs of the *future* as well as the present. Both wood and metal construction is "Custom-quality"—mass-produced to bring costs down to the "ready-made" level.

See for yourself how Kewaunee can help *you* with your laboratory designs. Write today for your free copy of the new Kewaunee Catalog of Laboratory Equipment. Please indicate whether interested in wood or metal construction.

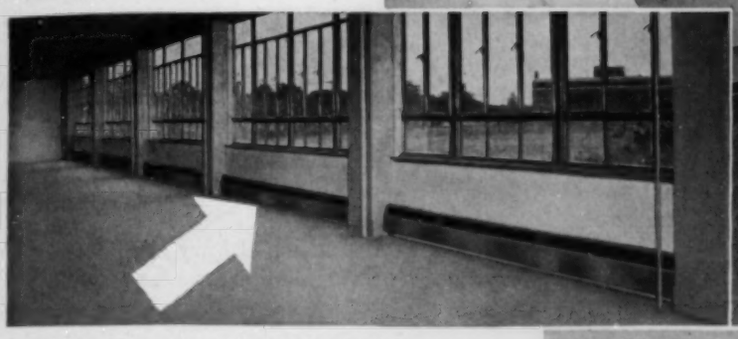
Representatives and Sales Offices in Principal Cities

Kewaunee Mfg. Co.
C. G. Campbell, *President*
5046 S. Center Street Adrian, Michigan

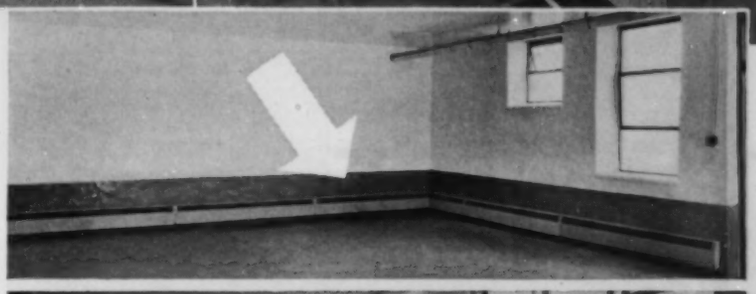
Below: Shawinigan Building in Montreal, head office of one of Canada's largest water and power companies. Archibald & Illsley, A. Leslie Perry, Associate Architects



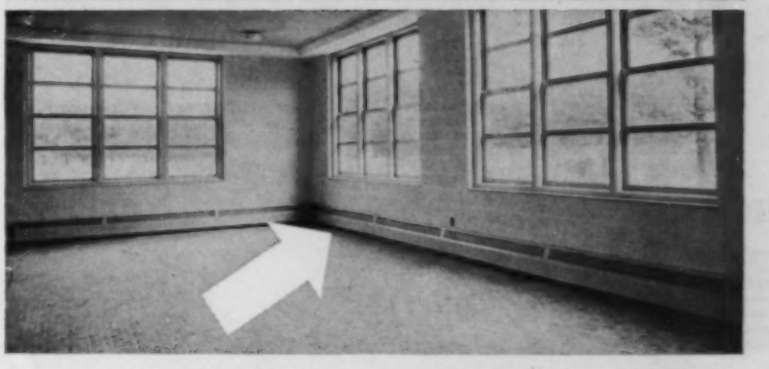
Webster Walvector in office of Mulholland-Harper Company, Philadelphia. Installation by contractor Herbert Baker & Co. Piping is concealed within enclosure.



Webster Walvector in new office building for New Jersey State Highway Department. Note supply and return risers; location of Walvector trim piece connectors immediately below window mullions, facilitating installation of office partitions. A Webster Moderator Steam Heating installation, Micklewright & Mountford, Architects, Runyon & Carey, Consulting Engineers, Philip S. Slack & Company, Heating Contractors.



Unheated basement room made available for parochial school classroom use. Webster Walvector in St. Robert's School, Chester, Pa. heats added room with hot water through heat exchanger, without change in main steam heating plant. Modernization installation by heating contractor John A. Morgan, Chester.



Walvector in Norfolk, Va., Catholic High School Lunchroom. Gleeson & Mulrooney, Architects, T. David Fitz-Gibbon, Associate Architect, M. G. Flurer, Consulting Engineer, Coley & Petersen, Heating Contractors.

SOLVES DESIGN PROBLEMS

Webster Walvector, the new idea in wall radiation, is daily solving engineers' heating design problems in new buildings and in modernization.

Illustrated here are four typical installations—an outstanding reinforced concrete structure for the N. J. State Highway Department; an interior of one of the most impressive, large, new Catholic high schools; a modernization of an industrial plant office; a conversion of a school basement into a useful classroom.

Here are some of the reasons why Webster Walvector solves design problems:

Walvector spreads the heat the full length of the wall, does away with hot spots, provides the really-wanted mild heating.

Walvector is out of the way, fits in splendidly in single story or multi-story buildings.

Walvector provides space for concealing much piping exposed with older types of radiation.

Walvector serves as readily with forced hot water as with steam . . . with forced hot water it can be used in "series connection" on perimeter heating principles developed by Webster.

Walvector lessens installation labor on steam jobs . . . with wall to wall installation long and complicated runouts are eliminated.

Walvector has high output, low weight.

Walvector assures clean heating, has ample sponge rubber gasket seal between mounting angle and wall.

Write for Bulletin B-1551 for complete dimensions, ratings, specifications, technical data.

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WARREN WEBSTER & COMPANY, Camden 5, N. J.
Reps. in Principal Cities • *In Canada, Darling Bros., Ltd., Montreal*

Webster WALVECTOR

For Steam and Hot Water Heating

"It is expected," said Colonel Crain, "that organization in the construction industry will proceed at an accelerated rate in cooperation with civic authorities."

Postwar Urban Growth Is Treated in New Brochure

A most interesting brochure, "Problems of Canadian City Growth," has been published by the Community Planning Association of Canada.

Author is Dr. Albert Rose, assistant professor of social work at the University of Toronto.

The brochure assesses the strides made by urban building since the war, and reviews some of the administrative problems that have arisen as waves of construction swept outward across municipal boundary lines.

CANADA (*Cont. from page 214*)

Information on almost all Canadian metropolitan centers with a population of 60,000 or over is presented. Maps and graphs are used to show their area, the housing stock they possess, and the value of the manufacturing plant they have acquired. The material is compiled so as to facilitate comparison of one center with another.

"Problems of Canadian City Growth" reveals the distribution pattern of new industry, and by relating it to shelter data, indicates how shifts of industrial concentration can intensify local housing shortages.

For instance, Calgary and Edmonton had nearly the same number of dwellings in 1941, and built almost exactly the same number from 1945 to 1949; yet Edmonton has had four times as much postwar industrial construction as Calgary. Greater Winnipeg contains five dwellings for every three in greater Hamilton; yet Hamilton has acquired three times the value in postwar factories that Winnipeg has. Greater Montreal and Toronto possess less than half the dwellings in the 14 cities examined; but they, the two largest metropolitan areas, have witnessed four dollars' worth of new factory buildings for every three dollars' worth in the other 12 centers put together.

Permit Canadian Bids on U.S. Newfoundland Work

Canadian contractors are to be given a chance to bid on the construction of additional facilities at the U. S. Naval Operations base at Argentia, Newfoundland. Cost of the work is expected to exceed $1,500,000.

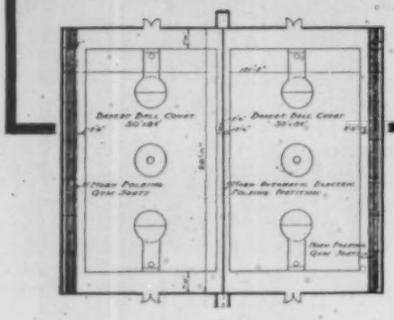
Tenders will be submitted through the Canadian Commercial Corporation, federal agency handling this country's national defense building program. Before Newfoundland became a province of Canada, Canadian contractors seldom had an opportunity to bid on U. S. Government jobs on the island. Contracts invariably were let to American firms.

Sculptors Seek Wider Market

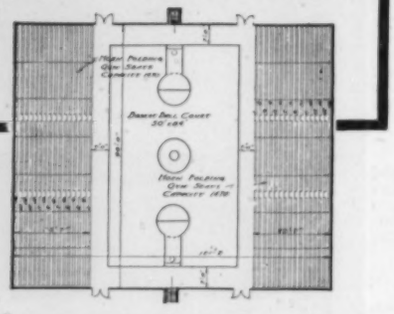
The Sculptors' Society of Canada (Elizabeth Wyn Wood, president) recently held a special meeting at Queen's University, Kingston.

Listed high on the agenda was the matter of future exhibitions. It was decided that stress will be laid on enabling Canadians to see how the sculptor can serve them in relation to modern gardens and buildings.

UTILIZE YOUR GYM SPACE WITH HORN



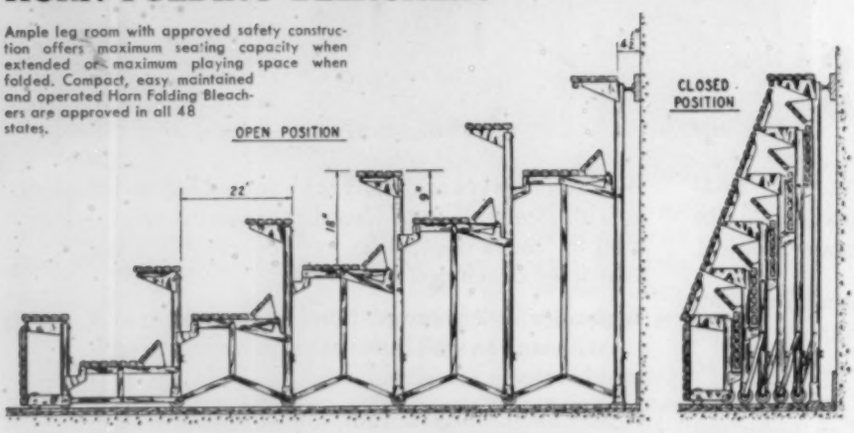
Two regulation basketball courts separated by a Horn Automatic Electric Folding Partition. Horn Folding Bleachers in folded position.



HORN FOLDING BLEACHERS extended increases the seating capacity for the BIG GAME! Horn Folding Bleachers will meet your requirements.

HORN FOLDING BLEACHERS

Ample leg room with approved safety construction offers maximum seating capacity when extended or maximum playing space when folded. Compact, easy maintained and operated Horn Folding Bleachers are approved in all 48 states.



ROWS	FLOOR SPACE IN USE	FLOOR SPACE *CLOSED	**HEIGHT	ROWS	FLOOR SPACE IN USE	FLOOR SPACE *CLOSED	**HEIGHT
3	4′ 9″	1′ 8¾″	3′ 0″	12	21′ 3″	4′ 3⅛″	9′ 9″
4	6′ 7″	2′ 0⅛″	3′ 9″	13	23′ 1″	4′ 6 ⅜″	10′ 6″
5	8′ 5″	2′ 3½″	4′ 6″	14	24′ 11″	4′ 9 ⅝″	11′ 3″
6	10′ 3″	2′ 6⅞″	5′ 3″	15	26′ 9″	5′ 1 ¾″	12′ 0″
7	12′ 1″	2′ 10¼″	6′ 0″	16	28′ 7″	5′ 4⅞″	12′ 9″
8	13′ 11″	3′ 1⅝″	6′ 9″	17	30′ 5″	5′ 8 ″	13′ 6″
9	15′ 9″	3′ 5 ″	7′ 6″	18	32′ 3″	5′ 11⅜″	14′ 3″
10	17′ 7″	3′ 8⅜″	8′ 3″	19	34′ 1″	6′ 2¾″	15′ 0″
11	19′ 5″	3′ 11¾″	9′ 0″	20	35′ 11″	6′ 6⅛″	15′ 9″

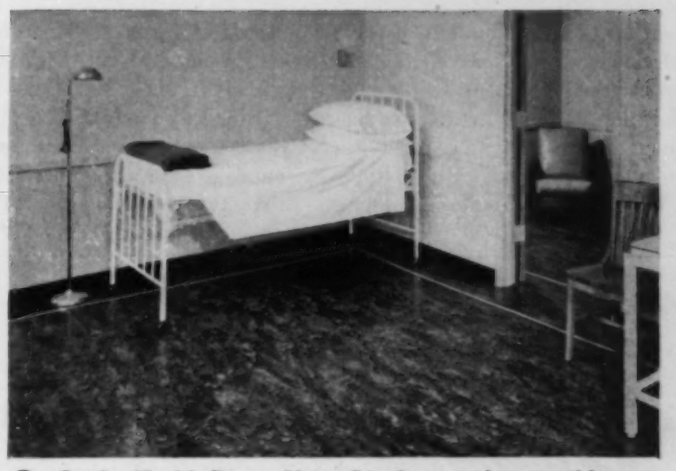
SINCE Horn 1909

*Dimension includes 4½ in. space between top seat and wall.
**Height in open position same as closed. For Bleachers higher than 20 Rows write for complete details and dimensions.

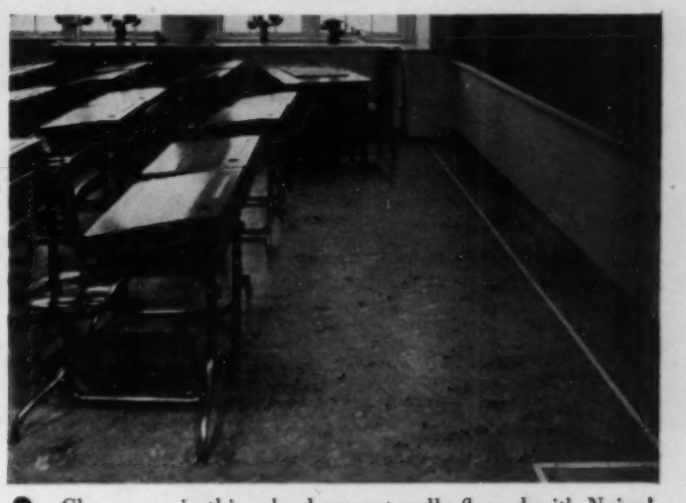
HORN BROTHERS COMPANY
DIVISION OF HORN INDUSTRIES FORT DODGE, IOWA, U.S.A.

school flooring need...

the unusual decorative effects for special purposes easily achieved with Nairn Linoleum!



2. In the Health Room, Nairn Linoleum makes possible true cleanliness. No place for germs to lurk in its crevice-free surface. Sanitary protection at its best!



3. Classrooms in this school are naturally floored with Nairn! Its true resilience reduces the noise of busy feet . . . promotes quiet, foot-easy walking always!

4. School corridors carry a constant flow of foot traffic. Here is where Nairn proves itself to be most economical with its long life and easy maintenance.

Nairn Linoleum!

NAIRN
SATISFACTION GUARANTEED OR YOUR MONEY BACK

1. Long Life
2. Enduring Beauty
3. Easy Maintenance
4. True Resilience

For FLOORS and WALLS

ARCHITECTURAL ACOUSTICS

(*Continued from page 160*)

tion. We go through the same procedure for the other principal interior surfaces and sum up the contributions of these several elements. For individual items such as chairs and persons, the number of absorption units for the item is usually given directly, since it is much less convenient to compute areas in these cases. Where the exact material in question is not listed in the available tables, we must estimate values from those given for similar materials.

With the summation of all the absorbing elements in the room and the volume of the room we can now calculate the reverberation time either from standard formulas or directly from charts plotted from the formulas. Such a chart has been made and is shown in Fig. 5. Any value of T can be read off once we know the volume and the number of absorption units. Or, working the other way, the chart shows how many units are needed to give a specified T in a room of given volume.

This chart involves two simplifications which should be mentioned in passing, but are too specialized to warrant discussion here. First, the value of T depends to some extent on the shape of the room, in addition to its volume and absorption. This shape dependence is appreciable for highly absorptive rooms, and for rooms of unusually elongated shape. Also omitted in Fig. 5 is the effect of absorption in the air itself. This is a significant factor in *large* rooms and at frequencies about a few thousand cps. The air absorption reduces the reverberation below that calculated from surface absorption alone. This effect should be included in the analysis of critical problems such as radio studios and concert halls.**

Having found the total number of absorption units (at each of several frequencies) required to give the desired reverberation characteristics, we must proceed to the selection of suitable finishes for the room which will satisfy our requirements. In the modification of existing rooms, this may involve the addition of special sound absorbing materials in the form of acoustic tile, or carpeting or draperies. There have been cases in which existing rooms have had too low a reverberation time.

Application of Sound Absorbents

The selection and placement of finish materials for reverberation control is not a matter that can be described fully in a few paragraphs, but some general remarks can be made. In some rooms it is not necessary to provide sound absorbing materials in addition to those provided by the audience (4 absorption units each) and the other normal furnishings of the room. In most cases we must use a certain amount of special sound absorbing materials to achieve optimum reverberation.

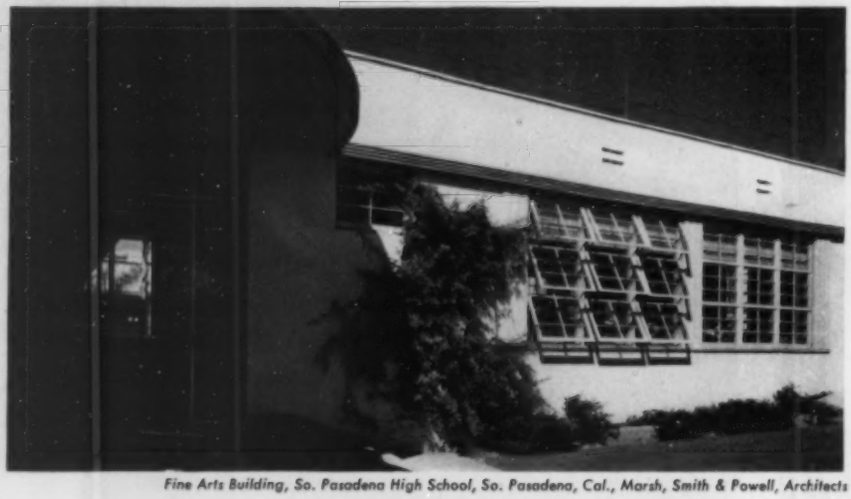
We have unfortunately acquired the habit of using a stock solution for the application of acoustic materials to rooms — cover the entire ceiling. Now this is an easy solution, and often the only feasible one for the more fragile materials. But it is usually the wrong solution in rooms where good hearing conditions are important, although it may be satisfactory for offices, shops, play spaces, etc., in which the material is installed for noise control only. One

** *See Knudsen, V. O. and Harris, C. M., Acoustical Designing in Architecture, New York, John Wiley & Sons, Inc., 1950.*

(*Continued on page 222*)

better control of VENTILATION
better control of LIGHT
with Dalmo

AUTOMATIC MULTIPLE WINDOWS
Wood Projected Awning Type



Fine Arts Building, So. Pasadena High School, So. Pasadena, Cal., Marsh, Smith & Powell, Architects

DALMO WOOD
WINDOW HARDWARE
For the Nation's Schools

Dalmo Windows give full control of ventilation from 1% to 100% of the window opening. The angle of the open sash directs air currents upwards, eliminating drafts. The air diffuses from the ceiling and circulates evenly through the room. The open sash sheds rain, deflects wind and allows controlled ventilation under all weather conditions.

Dalmo Windows allow the use of venetian blinds or window shades. The sash can be operated without disturbing blind or shade. Window shades may be attached to the sash itself to control daylight illumination and give uniform light distribution without interfering with ventilation.

See our CATALOG in SWEET'S FILE ARCHITECTURAL

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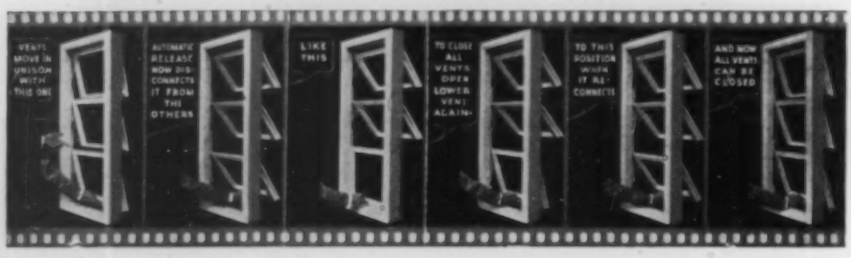
DALMO THE PIONEER OF AWNING TYPE WINDOWS


VENTS MOVE IN PRISON WITH THIS ONE
AUTOMATIC RELEASE NOW DISCONNECTS IT FROM THE OTHERS
LIKE THIS
TO CLOSE ALL VENTS OPEN LOWER VENT AGAIN
TO THIS POSITION WHERE IT ALL CONNECTS
AND NOW ALL VENTS CAN BE CLOSED

New beauty for school and college installations at lower cost—with KENTILE

6 Reasons Why Leading Architects Specify KENTILE

LOW COST Inexpensive to buy...to install...to maintain.

BEAUTY Colorful Kentile floors can be designed in a wide variety of rich colors.

DURABILITY Colors can't wear off. They go clear through to the back of each tile.

SAFETY Provides a confident footing for all. Virtually fire-resistant.

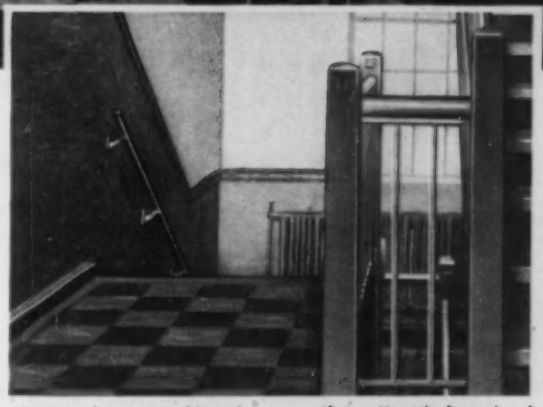
QUIET Kentile is a resilient material that cuts down noise and clatter of footsteps.

EASY TO CLEAN Mild soap and water keeps Kentile clean...occasional no-rub waxings keep it gleaming.

• For institutions, and for private homes, Kentile offers unique advantages that are quickly appreciated by your clients.

Kentile can be installed on concrete in direct contact with the ground. It can be laid over double T&G floors, or directly over plywood...and is also ideally suited for installation on radiant heated concrete slabs.

Kentile is laid tile by tile — meaning installation and labor costs are cut to a minimum. And you're sure of enthusiastic public acceptance when you specify Kentile, because of the large-scale advertising, with big color ads in leading magazines.



More and more architects are specifying Kentile for school corridor walls, as well as floors.

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DAVID E. KENNEDY, INC., 58 2nd Avenue, Brooklyn 15, N. Y.

ARCHITECTURAL ACOUSTICS

(*Continued from page 220*)

frequently sees school buildings in which an acoustic tile has been installed on all ceiling surfaces of classrooms, auditoriums, corridors, gym, etc. In the noisy spaces this is excellent, but it can make for very difficult hearing conditions in the auditorium, and does not solve the problem well in the classroom. As we have pointed out in Part One of this article, the ceiling is the one surface that can be most helpful in providing useful reflections between speaker and listener. In addition to having reduced the value of our one best reflecting surface by treating the entire ceiling, we have usually used a great deal more material than we need for reverberation control, thus making the room too "dead" for ideal listening conditions.

As a general rule, the special sound absorbing materials needed for reverberation control should be placed around the edges of the ceiling, on upper wall surfaces (especially rear wall for echo control) and on other specific "trouble zones." In the classroom, for example, the upper wall surfaces above the blackboards are ideal locations for acoustic materials — many times only these areas need be treated and nothing placed on the ceiling; or perhaps only a small strip of material is needed on the ceiling near the windows. The large flat-ceilinged auditorium should never have acoustic tile on the center portion of the ceiling, again because this surface can be so helpful in increasing the intensity of sound in the rear seats. This type of placement of acoustic materials calls for greater architectural ingenuity than does the conventional treatment of the entire ceiling, but it makes for greatly superior listening conditions.

Available Materials

There are available commercially many types of sound absorbing materials. These materials vary in appearance, durability, paintability, original efficiency and cost. In the integration of sound absorbing materials, it is not always necessary to use these materials in the conventional fashion. It may be, for example, that one wishes to introduce into a brick wall certain areas which are sound absorbing, but does not wish to cover that portion of the wall with an acoustic material. It is possible to place the sound absorbing element behind properly spaced openings in the brick work in these areas, giving not only an interesting pattern but providing excellent sound absorbing characteristics. A surface need not necessarily look "acoustic" to be effective in reverberation control. Many times we wish to suppress the absorption of the higher frequency sounds in order to improve the "brightness" of the room. In these cases it may be highly desirable to cover the sound absorbing surfaces with a facing in which the openings are rather widely spaced (perhaps 4 or 5 in. apart). There are many possibilities in the use of wood, metals, and masonry materials together with fabrics as facings and modifiers for conventional sound absorbing materials.

There are cases in which the perforated acoustic tiles are the most appropriate materials because of their high paintability and light reflection. In other cases an inexpensive blanket of mineral or glass wool may be the most appropriate choice where it is to be covered by some other surface treatment. The thickness of the sound absorbing element is an important consideration in most applications and is dictated to some

(*Continued on page 224*)

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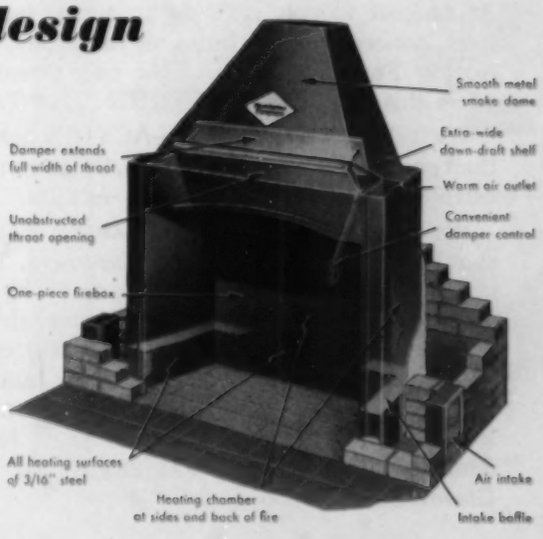

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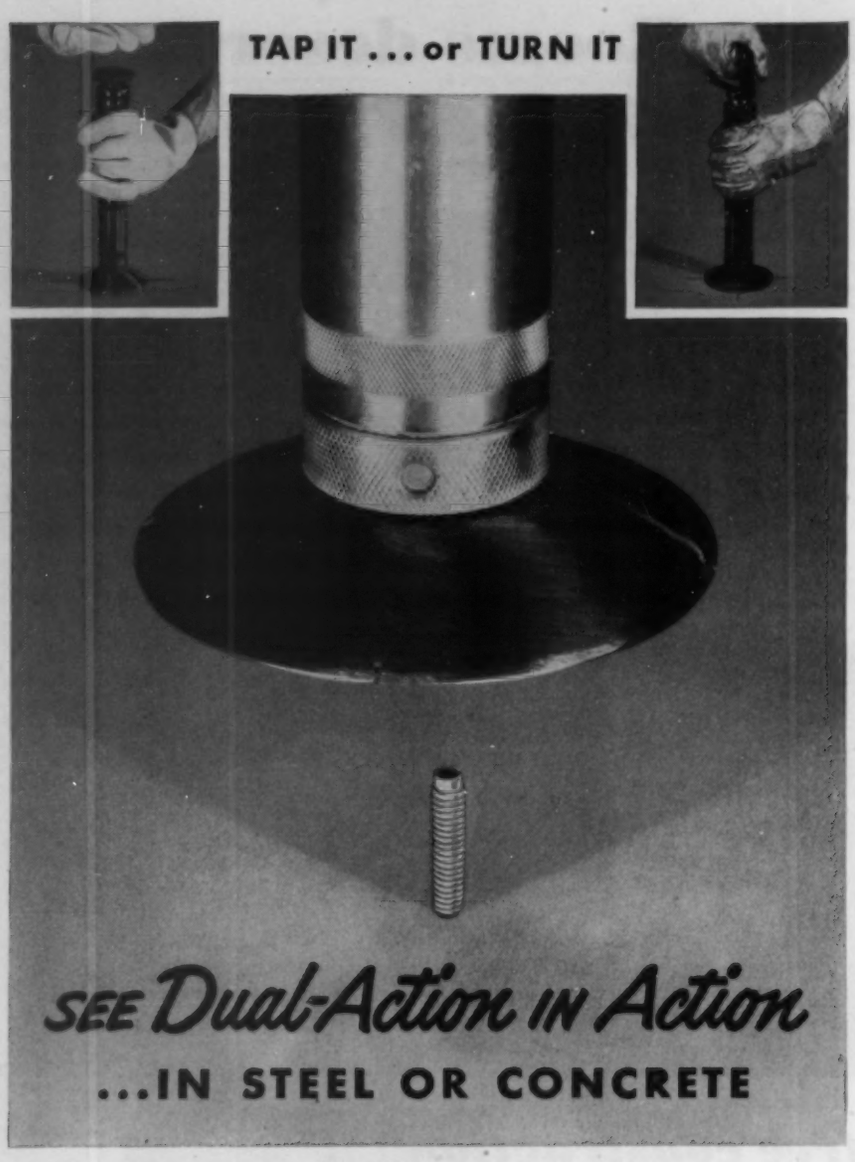

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Architectural Engineering

ARCHITECTURAL ACOUSTICS

(*Continued from page 222*)

extent by the use of the room in question. If the full frequency range of musical sounds is to be heard in the room it is quite likely that a rather uniform absorption characteristic would be desirable. An inappropriate treatment would be to use only a ½ in. sound absorbing material. One might resort to a considerably thicker treatment with a facing containing widely spaced holes or slots, or one might consider the use of thin plywood as the finish material.

A word on acoustic plaster is probably in order. The results to be obtained from acoustic plaster vary considerably with the methods employed in its installation. More important, however, is the problem of maintenance. The usual trowel or float finish acoustic plaster cannot be successfully repainted without loss of sound absorbing efficiency, and much disappointment has followed the application of paint to such materials. Several firms are now supplying acoustic plasters which are perforated with nail holes after the plaster has been placed, and tests show that this type of material is more repaintable than the conventional smooth finish jobs.

Upholstery Doubles as Absorber

A desirable quality for any room in which listening conditions are important is that the reverberation time be independent of the audience size. This requirement cannot be met exactly without elaborate gadgetry, but a very satisfactory approximation can be had by the use of upholstered seating. The average person sitting in a chair provides about 4 units of absorption. A chair upholstered on inside of back and top of seat with a padded fabric gives about 3 to 3.5 units of absorption when it is unoccupied. Thus the variation in the total number of absorption units in the room is small with varying audience size since the empty seats substitute quite well for the absent members of the audience. This is particularly useful in an auditorium used empty for rehearsals or for any room in which the audience size may vary considerably. Also, by using upholstered seats we can minimize absorption (and waste) of sound energy in materials which would otherwise have to be applied to make the room usable with small audiences.

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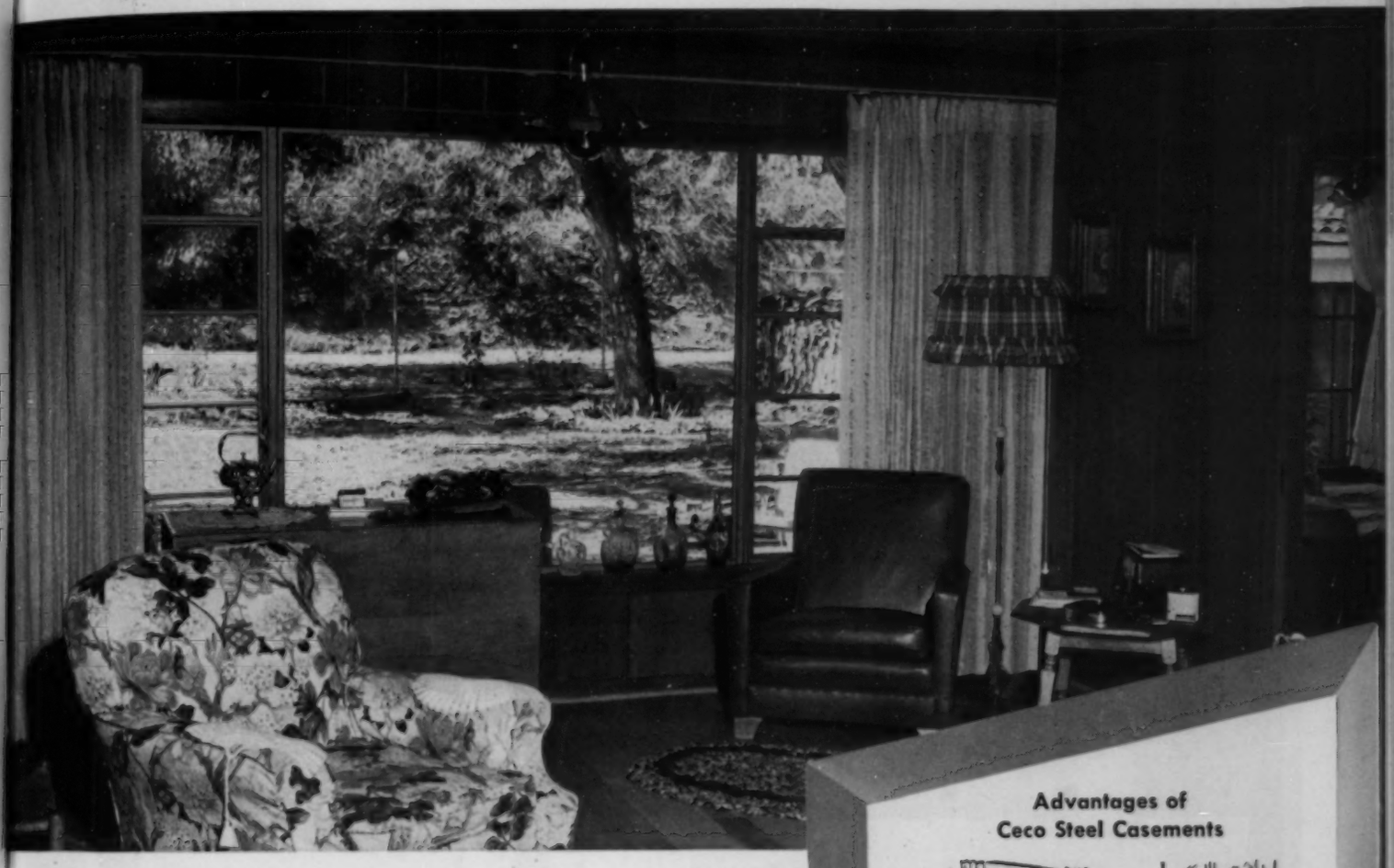

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PRODUCTS

(*Continued from page 164*)

pumps and for lighting circuits at filling stations, refineries and similar places dealing with oil products.

Conductors are insulated with vinyl compound and sheathed in a jacket that is said to be highly resistant to petroleum products. They are available in black, white, red, green, orange, blue and yellow. The wiring is available with solid conductors in sizes 14, 12 and 10 Agw. Construction Materials Dept., General Electric Co., Bridgeport 2, Conn.

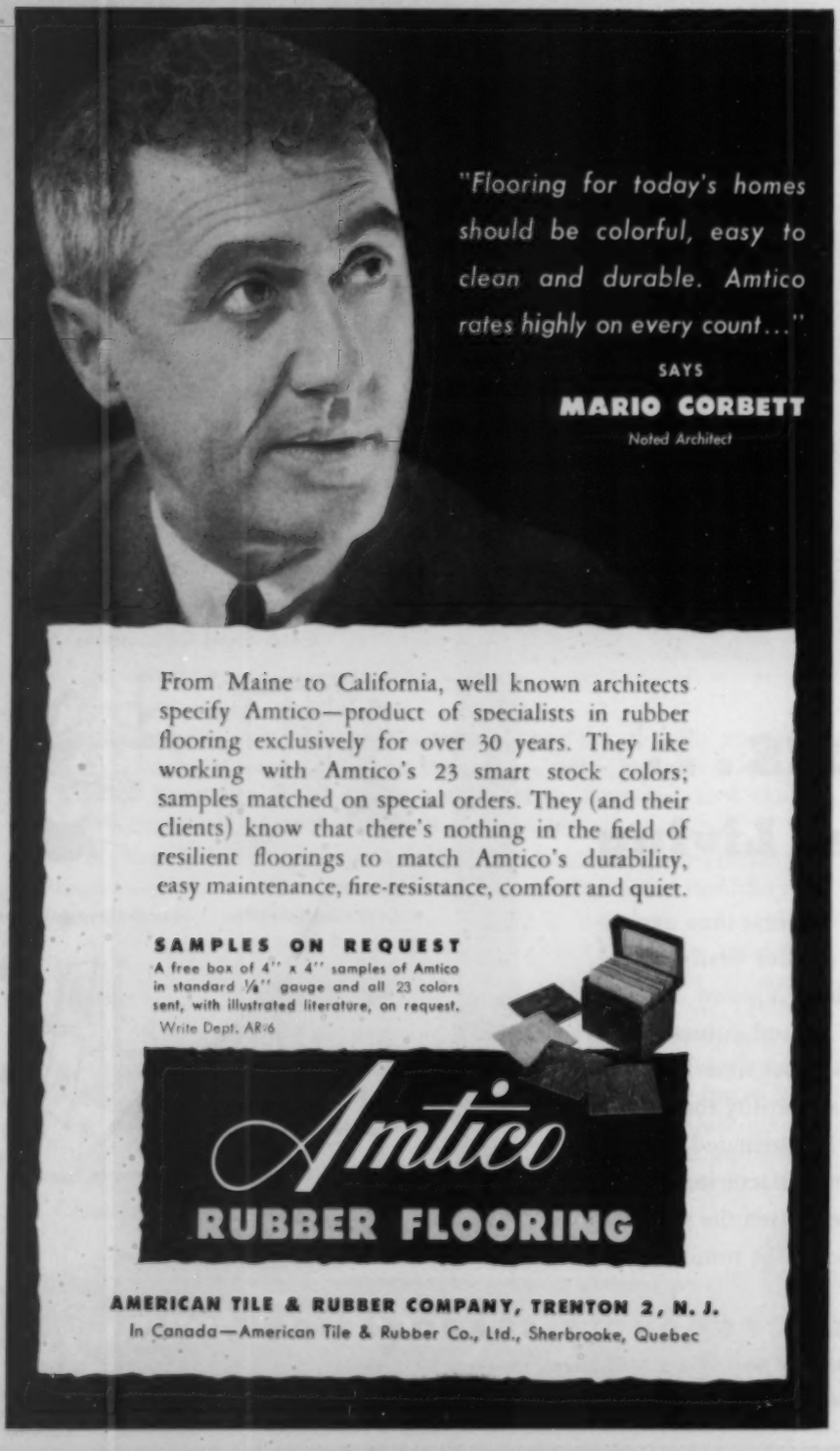
Automatic Louvers Operated By Sun

Automatic louvers, which keep direct sunlight out of classrooms and control the natural light within the rooms, have been developed by engineers of the Minneapolis-Honeywell Regulator Co., at the request of Architect Harold E. Burket. The vertical louvers have been installed in the new Will Rogers elementary school in Ventura, Calif.

Vertical louvers in new school (above) are automatically operated by photo electric cell and motor. A single master louver controls the entire bank (below)

Operation is electronic: two photoelectric cells act as light sentinels, and through a system of relays energize special motors. A single master louver panel operates eleven others in the school through a series of potentiometers mounted on the shaft of the master motor. One photo electric cell is mounted directly on the pilot louver. The other is inside the window and measures the amount of light admitted to the room. The two automatically adjust the louvers for proper light balance. A teacher wishing to darken a room for movies, however, can detach her room from the system, close the louvers with a room switch and restore it to the system when the movie is over. The device is expected to find wide use in many types of buildings. Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. So., Minneapolis 8, Minn.

(*Continued on page 228*)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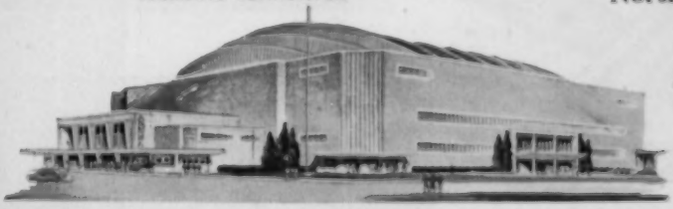

Foreground, Crane Norwich Lavatories, vitreous china. Features: rectangular basin, splash lip, *Dial-ese* controls with interchangeable cartridge.

Background, Crane Sanitor Urinals. Slope front design assures high sanitation, minimum upkeep.

Not shown: Crane Santon Closets with new *Triumph* flush valves. New valve has replaceable plunger and seat for easy maintenance.

Crane offers a complete choice of plumbing fixtures for any commercial installation—consult your Crane Branch or Crane Wholesaler.

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PRODUCTS

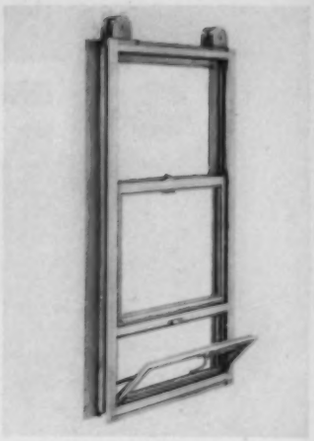
(*Continued from page 226*)

Aluminum Windows

The new *Sterling* double-hung aluminum windows, featuring a built-in hopper vent, were designed for controlled ventilation of schools and hospitals. This control is possible at seating level even when the sash is raised.

The in-swinging hopper vent is an integral part of the frame to give structural strength and rigidity. If desired, it may be installed in the top, rather than the lower section of the window. The vent is equipped with white bronze hinges, anchored in reinforced jamb blocks. Concealed sliding friction arms are of stainless steel. The section can be provided with muntin bars matching those specified in the double-hung unit. Weatherstripping is of Monel metal or stainless steel.

The double-hung window carries overhead concealed clock spring balances.



New aluminum double-hung window has hopper vent at bottom to prevent drafts

The lower sash has a continuous lift rail. The design permits use of top-hung full-length, double sliding or half vertical screens. The windows are custom-built in sizes up to 5 ft wide and 10 ft high. Sterling Windows, Inc., 369 Lexington Ave., New York 17, N. Y.

Kitchen Equipment

New models in the line of *Hotpoint* kitchen and home laundry equipment feature all-electric, automatic operation. The kitchen appliances include a double oven electric range, a combination refrigerator-freezer, an automatic dishwasher sink equipped with a food waste disposal, and a large food freezer. In addition there are matched base and wall

Electric kitchen has automatic operation

cabinets. Laundry appliances include an automatic washer, an electric dryer and an ironer. Cabinets match those of the kitchen equipment; the designs are simple, may be had in colors. Hotpoint, Inc., 5600 W. Taylor St., Chicago, Ill.

(*Continued on page 230*)

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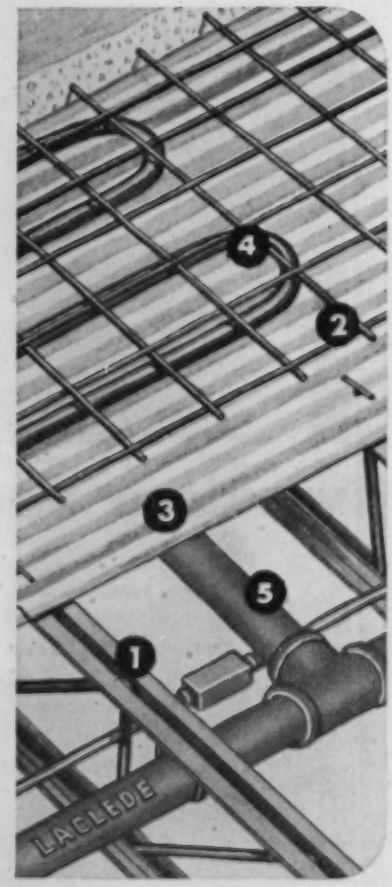

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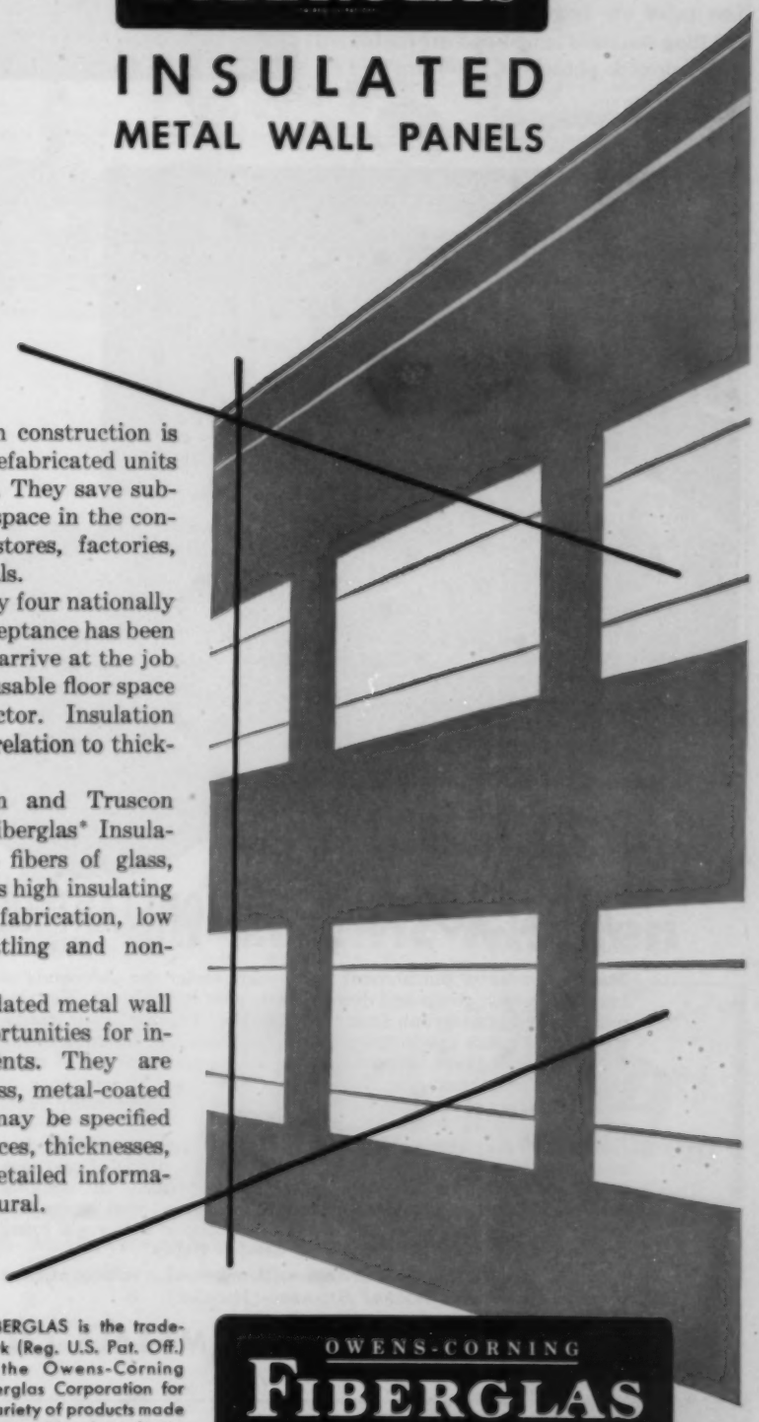

Newest development in modern construction is *insulated* metal wall panels—prefabricated units for exterior and partition walls. They save substantially on time, weight and space in the construction of office buildings, stores, factories, warehouses, schools and hospitals.

Their use is being pioneered by four nationally recognized industry leaders. Acceptance has been enthusiastic because the panels arrive at the job cut to fit—go up fast—increase usable floor space—reduce the load-bearing factor. Insulation values are exceptionally high in relation to thickness and weight.

Fenestra, Mahon, Robertson and Truscon panels are factory filled with Fiberglas* Insulation. Made of non-combustible fibers of glass, this material is used because of its high insulating efficiency, light weight, ease of fabrication, low moisture pickup—also non-settling and non-corrosive to metals.

The variety of designs in insulated metal wall panels offers you unlimited opportunities for interesting architectural treatments. They are made of aluminum, steel, stainless, metal-coated steel and protected metal and may be specified in a variety of flat or fluted surfaces, thicknesses, widths and lengths. For more detailed information see Sweet's File—Architectural.

*FIBERGLAS is the trademark (Reg. U.S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

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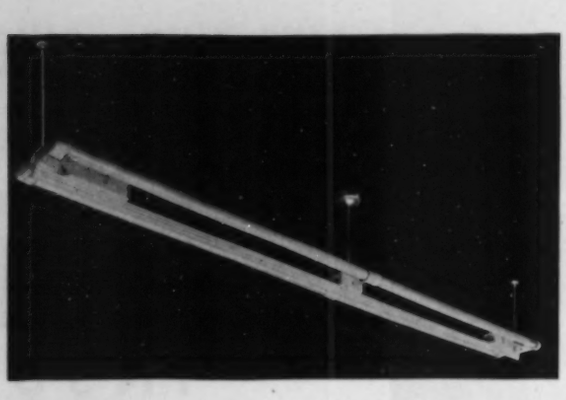
PRODUCTS

(*Continued from page 228*)

Glareless Fluorescent Tubes

The *Ainsworth Budgetlite T-17*, a new bare-tube fluorescent fixture, is reported to cause none of the glare that is ordinarily produced by unshielded lamps. The tubes are larger in diameter (2⅛ in.) than standard lamps, and are coated with new type phosphors. They are said to give the same amount of light per watt — about 40 lumens. The life of the lamps is claimed to be about 5750 hours.



Simple fluorescent fixtures produce glareless light with exposed lamps

The fixtures for the lamps are very simply designed. Thin center channels contain wiring and brackets for two rows of tubes; exposed boosters are mounted directly above the brackets. Installation, maintenance and operating costs are claimed to be low. In reducing glare, use is made of the principle that the eye sees glare only where there are severely contrasting areas of brightness in the overhead. With the proper ceiling surface, the exposed tubes are claimed to blend in with their surroundings. Ainsworth Lighting, Inc., 3810 29th St., Long Island City 1, N. Y.

Radiator and Range Enamel

Sapolin Radiator and Range Enamel is said to be capable of coating radiators and kitchen ranges in all colors without any cracking, peeling or discoloration due to heat. The paint is ready to use out of the can, and is easily brushed on. It dries hard with a tough, porcelain-like finish that is washable and durable. A ½ pint can covers an average radiator or range. Extreme color requirements and shading can be obtained by adding pure oil colors to the basic tones available. In such cases, two coats of enamel are necessary. Sapolin Paints Inc., 229 E. 42nd St., New York, N. Y.

Wallpaper

Thibaut Combed-Plywood Wallpaper is a new, modestly priced paper resembling striated plywood finished in a two-tone textured effect. It is available in 12 attractive colors, ranging from light tans, pinks and greens, to very deep tones. The sturdy paper may be hung either vertically or horizontally, as desired for decorative effect. This simple design is the first of the Thibaut line for 1951. Richard E. Thibaut, Inc., 269 Madison Ave., New York, N. Y.

(*Continued on page 232*)

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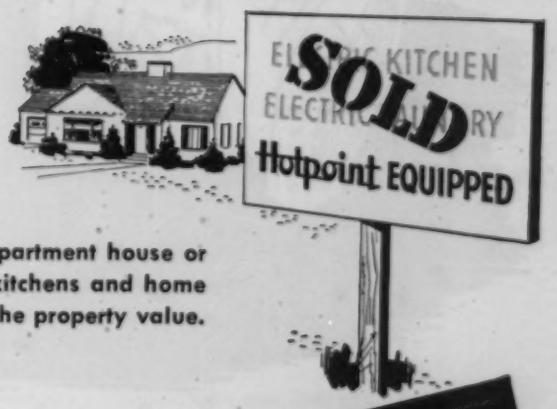

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PRODUCTS
(*Continued from page 230*)

Multi-Color Paint

A newly developed paint, called "*Mulla-Color*" produces a spatter-dash finish of two or more colors with a single coat. A primer coat is necessary only when the paint is used on metal. It is available in flat, semi-gloss and gloss finishes. In bulk, the enamel appears as a homogeneous mass of tiny specks of color. When sprayed or applied by the dip process, the result is a uniformly distributed broken-effect finish.

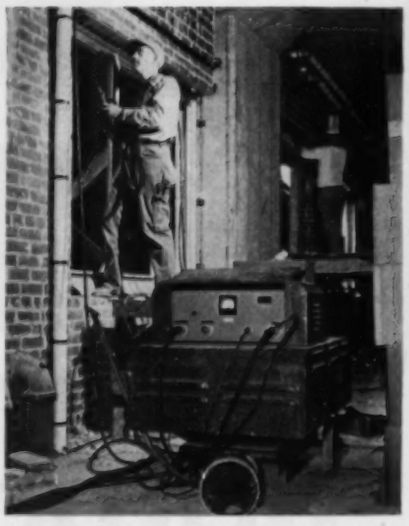
The paint is claimed to give good results on porous materials, and is recommended by the manufacturers for such uses as finishes for composition walls, unpainted furniture, or to refinish items which have been previously painted. It is available initially in 16 color combinations, but may be prepared in a variety of others having two to four colors. Some of the standard combinations are: brown and white, black and white, tan and white, green and white, light and dark blue, and pink and white. United Lacquer Mfg. Corp., 1001 W. Elizabeth Ave., Linden, N. J.

Stud Welding For Windows

The use of the *Nelson* stud welding method is claimed to reduce the time required for installing fasteners to hold aluminum windows in masonry. The need for drilling and tapping is eliminated. Four brackets along the top of each window frame serve as templates for locating the studs, which are welded right to the lintel through the bolt holes.

The method was used for the new building of the government's General Accounting Office in Washington, and is said to have resulted in considerable cost-saving. The work was handled with Nelson's new battery-operated power source, which permits stud welding where no power is directly available. The unit includes an automatic battery-charging device which operates on 110 volt a-c current and can be charged during or after use. It can be used for installing studs up to ½ in. diam with an automatic stud welding gun. The device consists of twelve 6-volt, 150 ampere wet storage batteries mounted on a strong frame and covered with an easily-raised hood. Wheels are optional equipment. The unit weighs about 1100 lbs and may be moved conveniently on a trailer or pickup truck. Also available is

(*Continued on page 234*)



Portable power unit permits simple installation of windows by stud-welding

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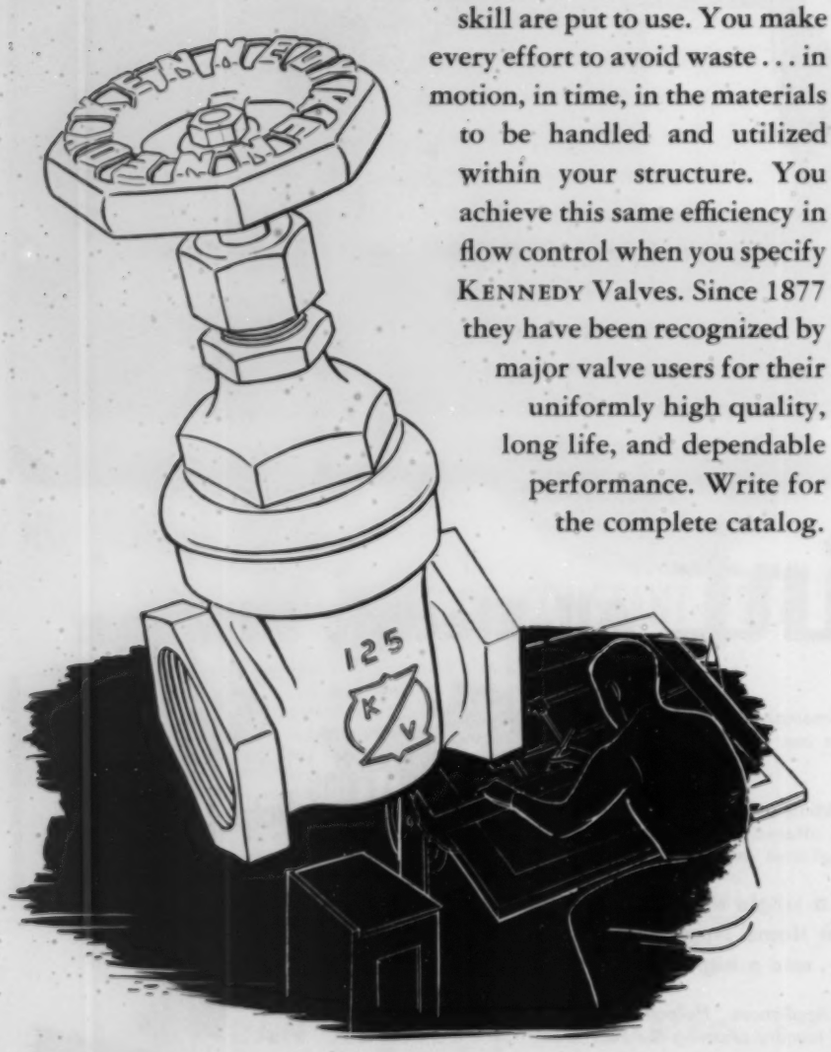

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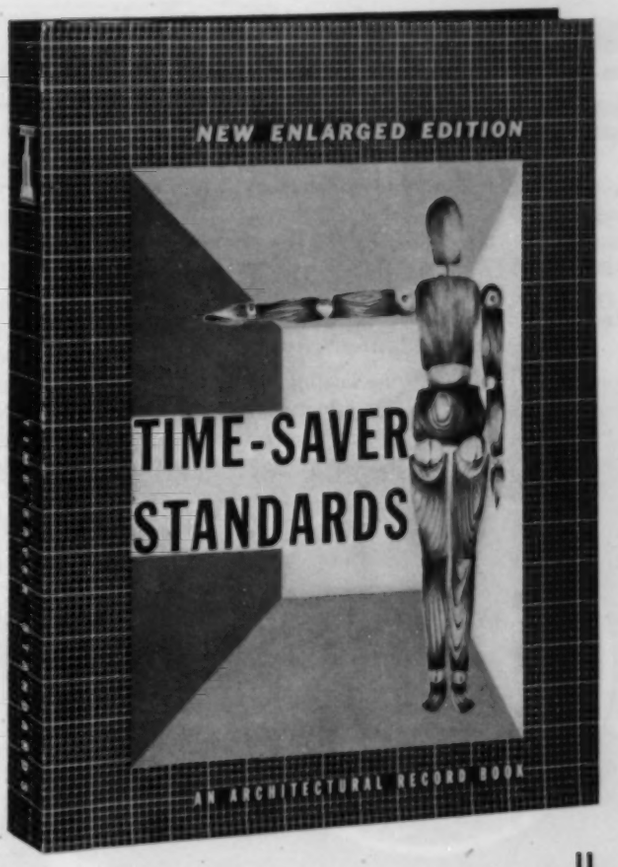

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PRODUCTS
(*Continued from page 232*)

a motor-operated generator set capable of welding studs up to and including 5/8 in. diam. Nelson Stud Welding Div., Morton Gregory Corp., Lorain, Ohio.

Redwood Color-Preservative

Liquid Raw-Hide Redwood Color-Preservative is claimed to provide a long-life economical finish, and to require a minimum of maintenance cost. The treatment is said to seal the surface, repel the elements and to add a uniform natural color that is practically fade-proof. The product penetrates into the wood and is without sheen. A mildew resistant (Aryl Mercury Naphthenate) is included in the formula. Linseed Oil Products Co., 359 Del Monte St., Pasadena 3, Calif.

Heating For An Expandable School

The *Dravo* heating-ventilating system used for the Elderton Joint School in Armstrong County, Penn., is claimed only to have cost about $860 for each room. Architects Scheeren & Rittenhouse were commissioned to plan a long-range project for a single-story structure containing 22 class rooms and a gymnasium-auditorium. The school board desired a plan that could be built in successive stages at very low cost.

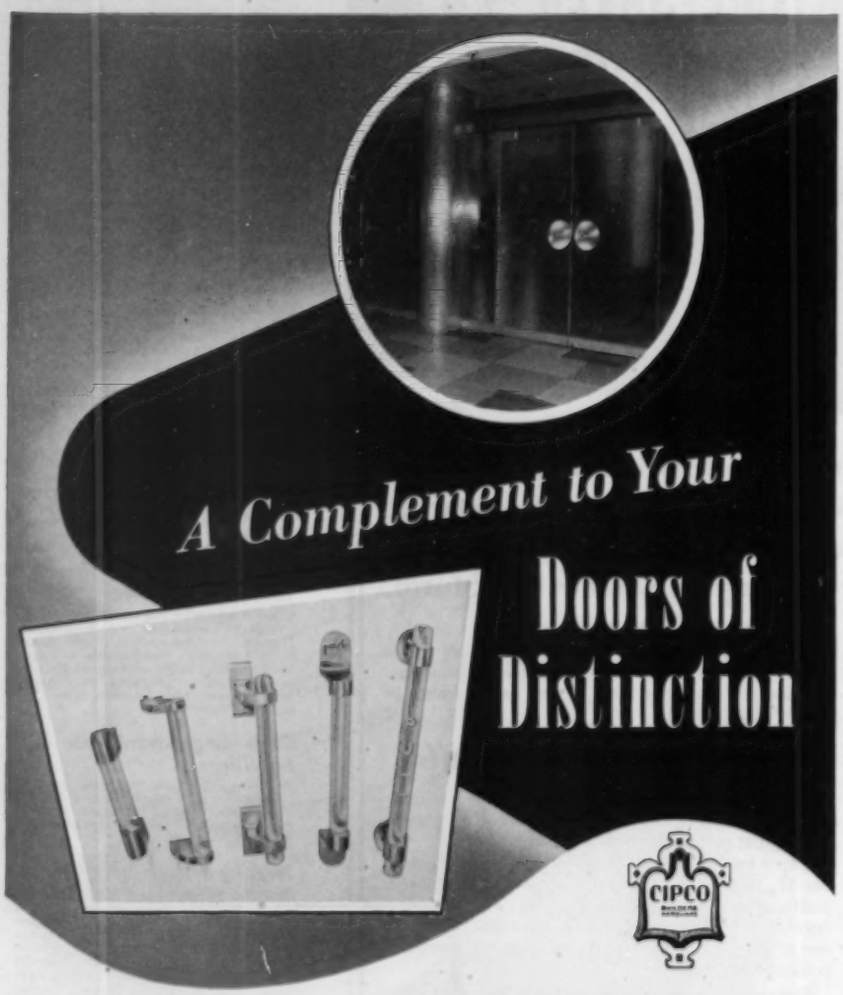
The first unit to be built has four class rooms, a workshop, an industrial arts planning room and two washrooms. Immediate plans call for the addition of two more class rooms. For economy, the heating system was installed with larger capacity than was needed for the present structure. The two new class rooms can be joined to the system by extension of ductwork.

First unit of expandable school is equipped with heater to serve next addition

The heater is direct-fired by gas, and can be converted to use with fuel oil if needed. It has an output capacity of one million Btu per hour and 11,000 cu ft of air per minute. The unit is installed in a small furnace room off the main hall. It operates on air recirculated from class rooms plus fresh air drawn through an inlet in the roof. Air is collected in a sheet metal plenum chamber by a 3-hp fan. The air flows over economizer tubes which carry flue gases from the combustion chamber to the vent stack. Then the air sweeps the stainless steel combustion chamber and is discharged into ductwork leading to individual rooms.

A single, centrally located thermostat is used for control of heater and fan. Warm air input into each room is regulated by spring-acting dampers on the individual inlets. The system operates with the burner off for ventilation on warm days. Dravo Corp., Fifth and Liberty Aves., Pittsburgh 22, Penn.

(*Continued on page 236*)



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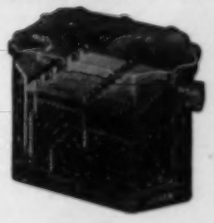

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The Leva-Dock makes it possible to load directly into or unload from all types of trucks or trailers . . . without using steel plates, bridge ramps, or other slow and frequently dangerous methods. Installation is simple and inexpensive.

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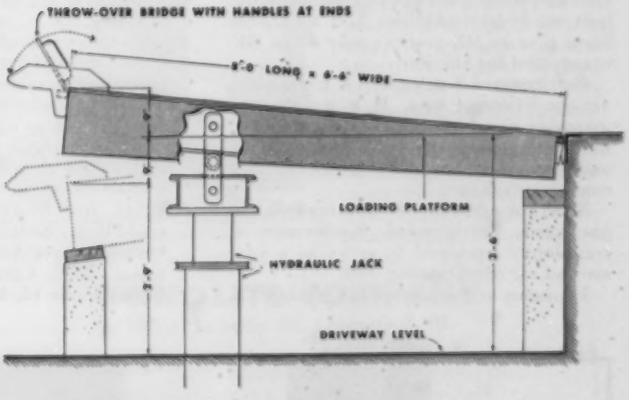

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The Leva-Dock is a hinged ramp, positioned by a hydraulic jack. Supporting arms and "throw-over" bridge connect ramp and truck bed. Platform automatically travels up or down as truck springs are relieved or compressed during loading and unloading.

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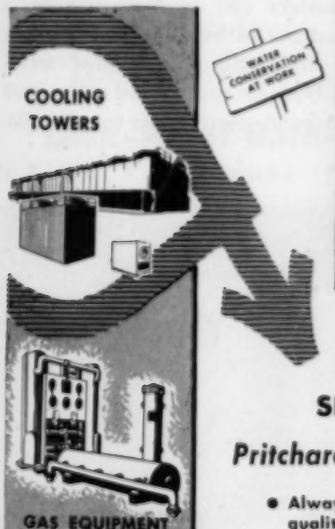

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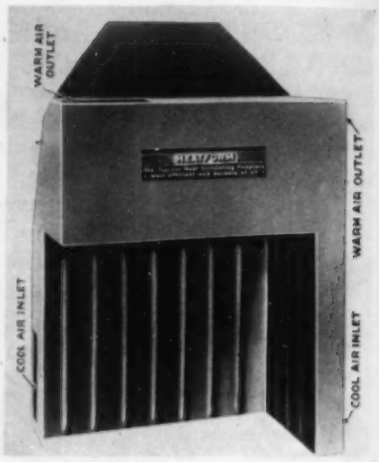
PRODUCTS
(*Continued from page 234*)

Heat Circulating Fireplaces

The *Healform* metal fireplace forms are available in two models for special mantel designs. Model S is a "Swedish" design, with both front and one end open to permit a view of the open fire from adjoining room areas. Model C is an "Indian design, with curved front and opening, and made for corner installation.

The units, made for enclosing with masonry walls, are equipped with warm and cold air outlets and inlets. The air chambers are claimed to capture heat before it is lost up the chimney and circulate it to all parts of the room, maintaining an even temperature throughout. The design of the throat and downdraft shelf and the location of the damper are said to prevent downdraft air currents from entering the throat. Grilles are available for the outlets, which are located at the top and sides of the standard models. If a panel front outlet grille is desired, a form can be provided with an opening through the front of the fireplace. Superior Fireplace Co., 1708 E. 15th St., Los Angeles 21, Calif.



Metal fireplace form is designed with open front and end to serve two areas

Tankless Water Heaters

Two new tankless water heaters have been added to the *Bell & Grossett* line. The heaters can be furnished as a standard unit without the jacket, or as a deluxe unit with an insulated metal jacket. Both are constructed with a cast iron shell and spiral copper tube bundle.

Deluxe model tankless water heater is compact, encased in insulated jacket

The heaters are available in three sizes, Model numbers T-12, T-14 and T-16. Respective capacities with boiler water at 180 F are 210, 240 and 300 gals per hour. Bell & Grossett Co., Morton Grove, Ill.

(*Continued on page 238*)

RK?
OK!

To many architects who know air conditioning equipment, RK is just a quick way of saying Refrigerated Kooler-aire, the completely packaged air conditioning unit made by USAIRCO. And architects learn that an OK comes easily when RK is specified for the job!

Refrigerated Kooler-aire is a complete air conditioning unit. It is a balanced assembly combining cooling and dehumidifying units, refrigeration compressor and evaporative condenser all in one compact package.

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When compact, complete air conditioning is needed, architects find that RK is a short-cut to an OK. So why not wire or write for more information about USAIRCO Refrigerated Kooler-aire. United States Air Conditioning Corporation, 3320 Como Avenue Southeast, Minneapolis 14, Minn.

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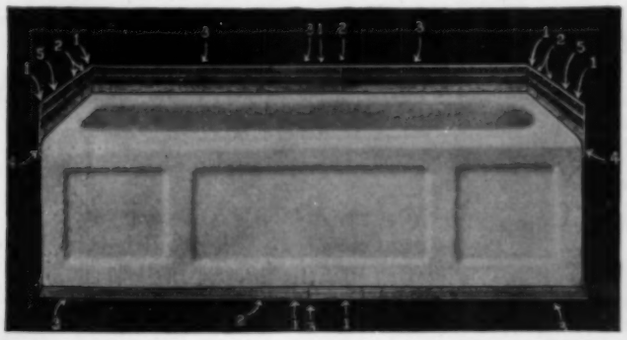

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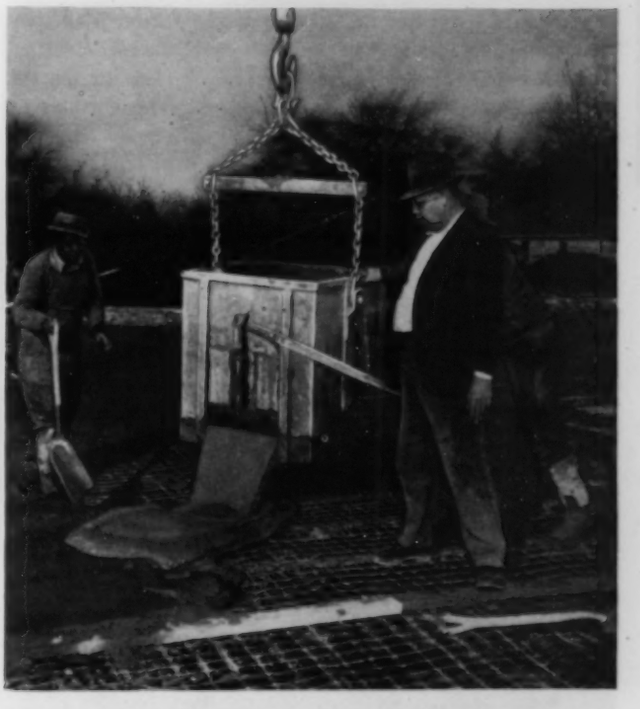

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PRODUCTS
(*Continued from page 236*)

Water Sterilizer

The *Sepco Ultra-Violet Water Sterilizer* has been developed for the purification of water which must be obtained from a well, spring or other unprotected source. The unit is automatic and electrically operated. It is claimed to require no attention, to use no chemicals and to add no taste or odor to the water. Ultra-violet radiation is said to effectively destroy all bacteria in even the most badly contaminated water, making it safe to drink.

The unit consists of a stainless steel tank 71 in. high by 12 in. diam. Inside are four specially constructed ultra-violet ray tubes extending vertically through the water. Patented baffles at various levels guide the incoming water close to the constantly glowing tubes. The sterilizer purifies water at the rate of 400 gals per hour. Where a larger supply of water may be needed, two or more units can be installed.

Installation is said to be quick and inexpensive. It is only necessary to connect the unit into the incoming water line ahead of any taps, then plug it into a standard electrical outlet. Water inlets and outlets have standard ¾ in. IPS connections. The unit operates on either 50 or 60 cycle, 110 or 115 volt a-c, and is equipped with a transformer to step up the voltage required for proper ultra-violet radiation. Special models can be supplied for use on other voltages or on d-c. Sepco Corp., Pottstown, Penn.

Charles of the Ritz, at B. Altman & Co., New York City

When A "Face Lifting" Is In Order
. . . *be sure to call on Bergen!*

IT isn't coincidence that Charles of the Ritz called on Bergen to craft and install their units in outstanding stores throughout the country. Both of us are pretty good "face-lifters" in our respective fields.

Among the units were those for Filene's in Boston, B. Altman & Co., New York (shown above), Kresge Dept. Store in Newark, Bamberger's, Newark, A & S in Brooklyn, Gimbel's, Milwaukee.

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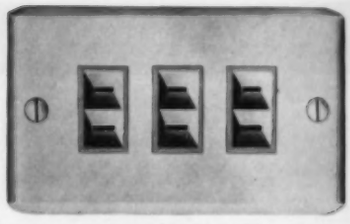
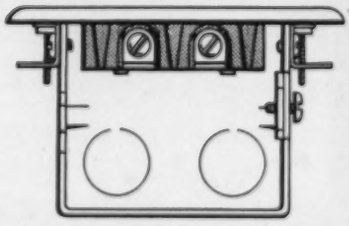
Remote-Control Outlets

Two new triple outlet and plate combinations have been added to the *General Electric* remote-control wiring line. They are made of molded, one-piece ivory plastic construction, and are said to take less box space than conventional convenience outlets. Available wiring space is larger.



Plastic outlet is designed for remote-control wiring. Section shown below



Unit No. RO-1 outlet has common feed and ground, and unit RO-2 has separate feed and common ground. The separate feed permits control of one or two outlets by switches while the remaining outlet or outlets remain live. Both units are rated for 15 amp, 125 volts; and 10 amp, 250 volts. The outlets are suitable for conventional wiring as well as the remote-control system. Construction Materials Dept., General Electric Co., Bridgeport 2, Conn.

(*Continued on page 240*)

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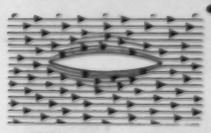

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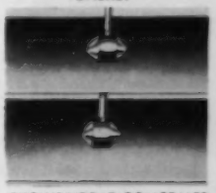

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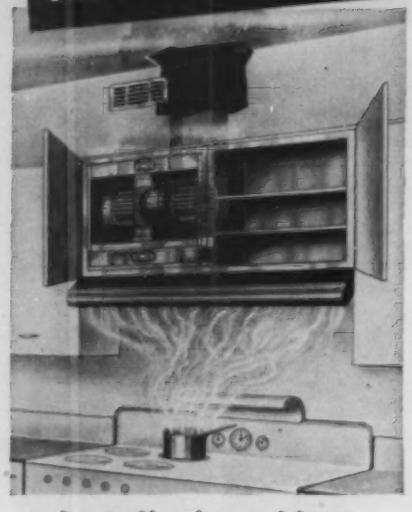

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Only the Super Clipper Kitchen Ventilating System—made by Trade-Wind—exhausts cooking fumes and heat from *both the stove and at the ceiling level.*

This newest development is installed in metal or wood cabinets directly over the stove.* The twin squirrel cage blowers produce 600 CFM—more than sufficient power to trap all cooking heat, grease and odors from the range top as well as through the second inlet at the ceiling. The motor is equipped with a 2-speed control. Two metal air filters are provided. Both a fold-under hood and stationary hood are available and both are optional.

No other kitchen ventilator can do the *complete* job that the Super Clipper accomplishes. And no other ventilator offers the architect, the builder and the home owner the versatility and efficiency which the Super Clipper provides for the modern kitchen.

*Several manufacturers now build metal cabinets especially for the Super Clipper. Wood cabinets can also be built on the job. Trade-Wind does not provide the cabinet.

Write today for complete information.

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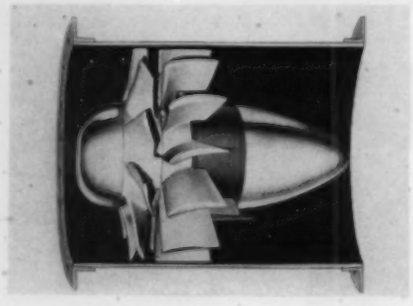
5707 S. Main St., Los Angeles 37, Calif.

Architectural Engineering

PRODUCTS
(*Continued from page 238*)

Fans For Ductwork

Two new *Robbins & Myers* vaneaxial type, medium pressure propeller fans, designed for ductwork applications, are said to permit series or straight-through connections for all air-moving requirements. Type VCDD direct-driven units are constructed with the motor inside the airstream for non-hazardous applications. Type VCS belt-driven units are designed for installations in which corrosive or inflammable fumes, dusts or vapors must be considered.



Cross section of new medium pressure propeller fan designed for use in ductwork

Both type units operate on a low hp input and have airfoil section propellers. Guide vanes are planned to prevent swirling and provide a smooth axial flow of air. The vane is mounted independent of the heavy gage steel drum. Spun aluminum nose and tail cones serve to streamline the air flow. The units are equipped with open-ventilated, ball bearing motors. They are said to be easily installed in standard 20 and 24 in. diam duct systems. Robbins & Myers, Inc., Springfield 99, Ohio.

Rolling Door Hardware

The *Washington Line Rolling Door Track and Hanger* feature simplicity of construction and installation. The unit is designed for all types of interior doors. Tracks are of steel construction. Hangers have ball-bearing or nylon wheels for

(*Continued on page 242*)

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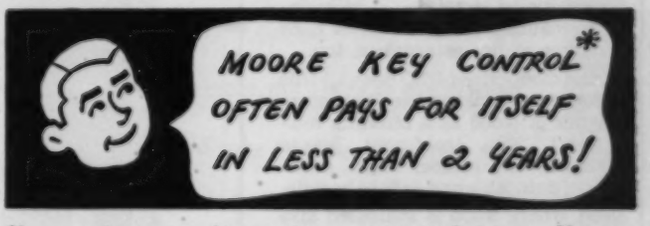

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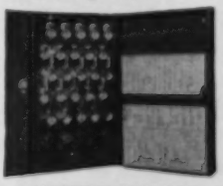

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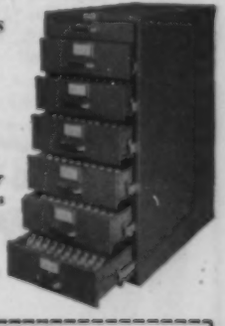

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Architectural Engineering

PRODUCTS

(*Continued from page 240*)

noiseless operation. Doors are supported from the top with no floor tracks. No detail mill work is said to be necessary for installation. Hangers may be either side or top mounted. Washington Steel Products, Inc., 1420 W. Goler St., Tacoma, Wash.

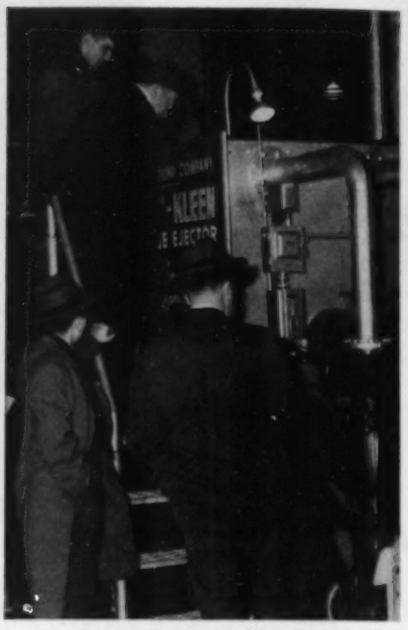
Window Balancer

Made of spring steel, *Kwik-Out* window balancers provide a simple means of maintaining a constant pressure between window and jamb. This friction is ample to hold the window in any position desired, yet allows the window to be moved up and down easily. The need for sash cords and weights, or for similar equipment is eliminated. The devices also permit quick removal or insertion of

Spring steel window balancers permit easy removal, replace cords and weights

windows without the use of tools. The window is merely pressed towards the side having the units and lifted clear of the jamb. To reinsert, the side with the units is inserted first, slight pressure is applied, and the other side slipped into the groove. When in place, the firm grip provided is claimed to eliminate the possibility of rattles or chatter. RCS Tool Sales Corp., Joliet, Ill.

(*Continued on page 244*)



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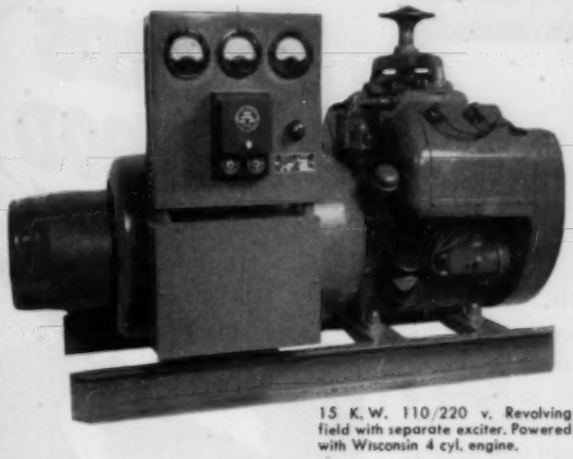

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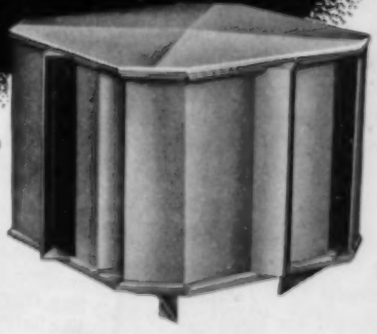

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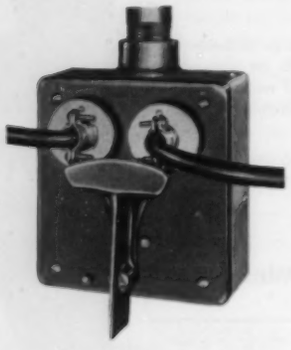
Architectural Engineering

PRODUCTS
(*Continued from page 242*)

Interlock Receptacle

The *Panellit* interlock receptacle is designed with safety features for the use of cord extensions in hazardous locations. The unit incorporates a safety cam lever which locks cord caps securely in the receptacle. This makes it impossible to remove the cord while the current



Cam lever in center of safety receptacle prevents removal of cords with current on

is on. A flip of the lever breaks the circuit and allows plugs to be removed from the sockets. Standard flush type single or duplex receptacles, fitting any conventional cord cap, are used. Units are available in capacities up to 20 amperes. Panellit, Inc., 7218 No. Clark St., Chicago 26, Ill.

Mixing Valve

A new automatic hot water mixing valve, called the *Symmons T-70 Tempering Controller*, is designed for large capacity and to give exact hot water temperature required, regardless of heater temperature variations. It also automatically compensates for normal pressure fluctuations. Temperature settings are calibrated from 90 to 180 degrees.

The unit is operated by a thermostatic solid fill bellows mounted out of the water in a protected chamber subject only to atmosphere. To this thermal element is attached 72 running in. of liquid

(*Continued on page 246*)

FIRZITE
—tames wild grain and checking on fir plywood

Wild grain and checking are just about the only troubles in using fir plywood. The one sure way to insure a perfect finish is to start with FIRZITE. It tight-seals the pores, virtually prevents grain rise and checking, readies the surface satin-smooth for paint, stain, enamel. (For blond, pickled, wiped or tinted effects on any wood, use White Firzite.)

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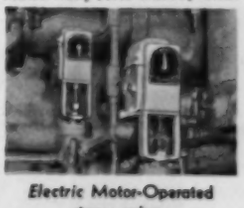
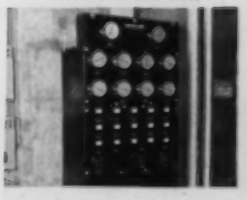
UNIFLO MA Grilles in typical interior. Grill frames finished to match wall, cores electroplated.



Electric Motor-Operated steam valves.

Return air grilles in corridor doors — UNIFLO Sight-tite.

Electric Motor-Operated Valve in chilled water line.



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Architectural Engineering

PRODUCTS
(*Continued from page 244*)

fill copper tubing located in the mixing chamber. Temperature changes in the mixing chamber produce hydraulic action to operate the valve. The Symmons Engineering Co., 791 Tremont St., Boston, Mass.

Brick Conveyor

The *Brik-Toter* conveyor is designed to eliminate carrying materials such as brick up ladders in construction work. The device is 20 ft long, 14½ in. wide and weighs 385 lbs. It is built with bridge type trussed construction and torque frame. The conveyor belt is 12 in. wide vulcanized rubber, driven by an enclosed ½ H.P. gear motor. A gasoline motor drive is available. The fixed speed of the belt is 60 ft per minute.

Conveyor simplifies and speeds transportation of brick to second floor levels

The bed of the conveyor is constructed with 16 ga. 2 in. diam tubular rolls, ball bearing mounted, and spaced on 12 in. centers. It is assembled in heavy gage, 3 by 1 in. pressed steel channel frames. The load capacity of the unit is about 1200 lbs, evenly distributed. It also may be used to save labor in transporting masonry, short lengths of lumber and other materials. Mar-Rail Conveyor Co., 560 York Ave., Pawtucket, R. I.

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ADAMS-RITE patented bolts are stronger, easier to install, keep their original finish

Adams-Rite, the originators of the exclusive extruded design in Surface, Slide and Cremone Bolts, is still the only source for all styles! This patented construction with concealed guides eliminates all unsightly straps and scratching. Solid brass throughout. Four screws to each bolt insure rigid strength. Installation is easy and error proof and adjustments are made on the job without taking the bolt apart. Spring tension gives uniform pressure at all points.

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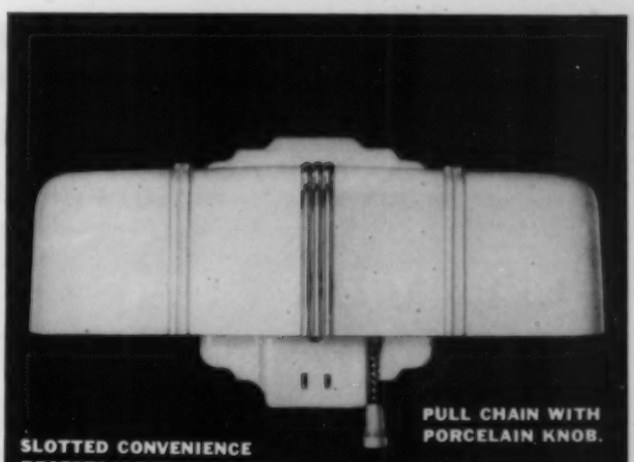

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RATING: Pull Chain-250W 250V; Keyless-660W 250V. Convenience Outlet 15A-125V or 10A-250V.

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HALSEY TAYLOR Fountains

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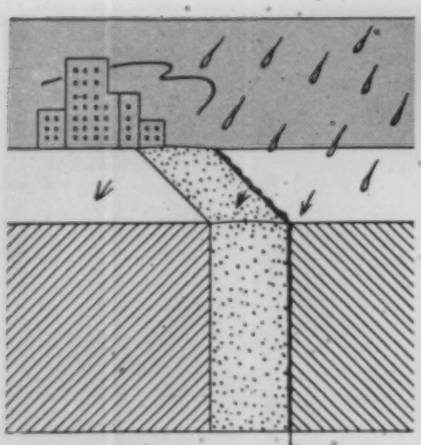

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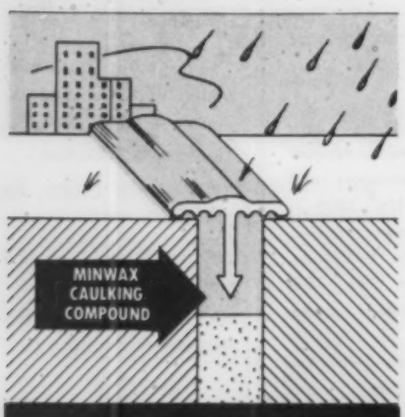

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Architectural Engineering

LITERATURE

(*Continued from page 163*)

Among the items included are: performance charts, engineering data sheets, dimension drawings, installation instructions and price lists. Other sheets cover accessories available for the blowers. 42 pp., illus. The Moore Co., 800 S. Missouri, Marceline, Mo.

Daylighting for Schools

Better Light For Our Children. Booklet offers simplified discussion on light-directing glass blocks used in daylighting classrooms. The first section is concerned with glare and contrasts in lighting, and its effect on children's health and posture. The remainder of the booklet treats on methods for daylight control, including the system combining glass blocks and clear glass windows. 24 pp., illus. American Structural Products Co., Ohio Bldg., Toledo, Ohio.*

Aluminum Flush Doors

All-Aluminum Kawneer Flush Door. Folder presents a series of fluted aluminum doors. Features and construction details of the doors are given. Notes and sketches describe the hardware and glass or louver panels available. Specifications and a table of sizes for single and double doors are included also. 4 pp., illus. The Kawneer Co., Niles, Mich.*

Automatic Dish Dispensers

Lowerator Automatic Storage and Dispensing Units for China, Glasses, Trays. Booklet describes features and operation of the spring-operated, under-counter dispensers. Sketches, specifications and details are given for the various types of storage units available. Photographs are included of typical installations in cafeterias, restaurants, etc. 28 pp., illus. American Machine & Foundry Co., 485 Fifth Ave., New York 17, N. Y.

Registers and Grilles

Independent Registers and Grilles (Catalog No. 50). Covers a line of grilles,

(*Continued on page 250*)

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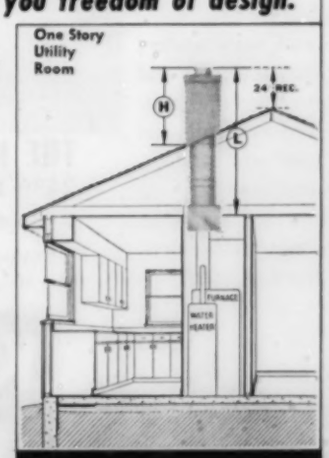

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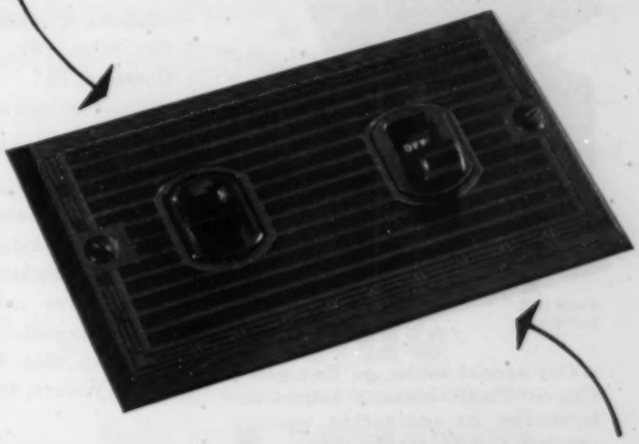

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Architectural Engineering

LITERATURE

(*Continued from page 248*)

cold air faces and registers. Each type is presented with descriptive notes, selection tables, weights, open areas, sizes and prices. The line includes wall, ceiling and floor outlets for heating or cooling. 36 pp., illus. The Independent Register Co., 3747 E. 93rd St., Cleveland 5, Ohio.

Grille Selector Slide Rule

Uni-Flo Grille and Register Selector. Slide rule designed to provide rapid sizing of Uni-Flo ventilating and air conditioning grilles. Grille size is based on noise level, air volume, throw and ceiling height. A table of maximum allowable noise levels for different installations is printed on rule face. The device is made of heavy cardboard, with plastic covered windows. Available at no cost from Uni-Flo Sales Div., Barber-Colman Co., Rockford, Ill.*

Kitchen Planning

Kitchen Planning On A Small Budget. Booklet discusses planning and remodeling of small kitchens. The Youngstown line of equipment is presented. The booklet was originally prepared for home economists and homemaking teachers. 20 pp., illus. Mullins Manufacturing Corp., Warren, Ohio.

Aluminum Windows and Doors

Tecler Aluminum Windows and Doors. Gives window frame and bar standard types and sizes, installation details and specifications. A section shows representative installations as well as details and specifications. Residential and commercial doors, hardware and specifications for aluminum windows are included. 12 pp., illus. Tecler Aluminum Products, 625 Yale Avenue North, Seattle 9, Wash.

Glare Reducing Glass

Coolite Heat Absorbing Glass. Explains and diagrams properties of Coolite which is said to afford clear vision and obviate "squint eyes" by reducing solar heat

(*Continued on page 252*)

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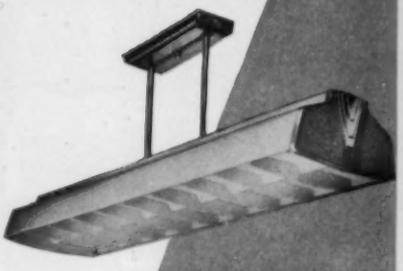

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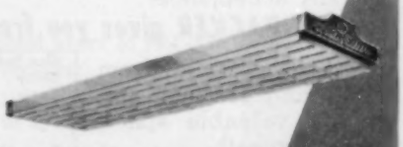

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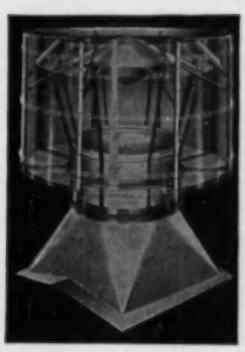

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